

In This Issue—Automobile Racing in 1925

# MOTOR AGE

Vol. XLVII  
Number 10

PUBLISHED WEEKLY AT 5 SOUTH WABASH AVENUE  
CHICAGO, MARCH 5, 1925

Thirty-five Cents a Copy  
Three Dollars a Year

**How many dealers  
actually realize that  
the day of the high  
priced six has gone—  
and the day of the  
line eight has come?**

**A check-up among  
them a few months  
from now will an-  
swer that question.**

*Edward S. Jordan*

President  
Jordan Motor Car Company  
Cleveland, Ohio

# Fleming Attachments Designed for BLACK & DECKER Quarter-Inch Electric Drill

All Fleming Electric Drill Attachments are designed especially for use with the BLACK & DECKER QUARTER-INCH PORTABLE ELECTRIC DRILL.

This drill has a no load speed of 2,000 R. P. M. and weighs only 5 pounds. The price for use on 110 volts is \$28.

"The Pistol Grip and Trigger Switch" is at the back of this drill (see illustrations) making it particularly handy for use in connection with the Fleming Attachments.

Every Automotive Repair Shop should have at least one of these small drills for driving the Fleming Time Savers.

The following are just a few of the operations which can be performed with a Black & Decker Quarter-Inch Electric Drill in connection with the special Fleming Electric Drill Attachments:

Grinding valve seats.

Cleaning carbon from cylinders.

Cleaning valve stem guides.

Cleaning carbon from valves and valve stems.

Buffing tires and tubes.

Cleaning cylinder head bolt holes and bushings.

Removing carbon from valve ports and tops of pistons.

Cleaning storage battery parts.

Cleaning welds.

Removing scale from forged and hardened parts.

Cleaning brass and copper before brazing and polishing.

Removing rust and paint from automobile bodies.

Cleaning rust and dirt from brake bands and other parts.

Removing file marks from aluminum bodies.

Removing rust and dirt from tire rims, spring leaves, etc.

Roughing tires for vulcanizing (inside or out).

Drilling out storage battery connectors.

Sharpening drill bits and other tools.

Saw slotting storage battery plates.

Cleaning storage battery jar and cover for resealing.

Cleaning storage battery plate lugs, plate straps, plug terminals and cell connectors for lead burning.

These are just a few of hundreds of uses for the Quarter-inch Drill in connection with Fleming Tools.

A new booklet has been prepared covering these and other uses, which will be sent free upon request. Write to us for this new book, entitled "Electric Drill Power."

**THE BLACK & DECKER MFG. CO.**  
Towson, Maryland, U. S. A. Lyman Tube Bldg., Montreal, P. Q.

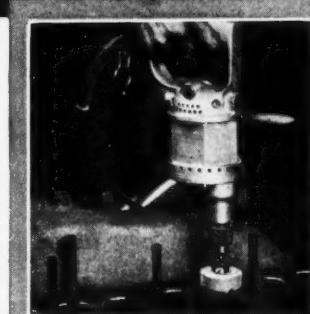
BRANCH OFFICES AND SERVICE STATIONS

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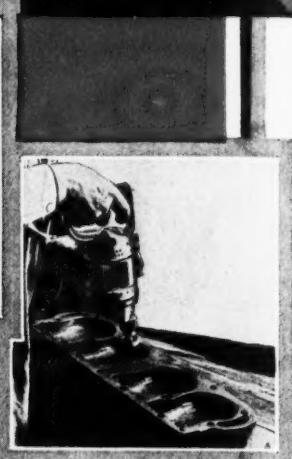
# BLACK & DECKER

"With the Pistol Grip and Trigger Switch"

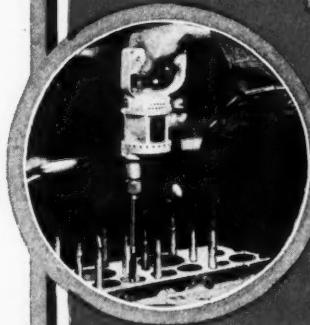
Quarter-Inch  
Electric Drill



Grinding Valve Seats with Fleming Valve Seat Grinder.



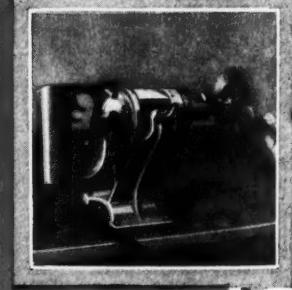
Cleaning carbon from cylinder head with Fleming Carbon Removing Brush.



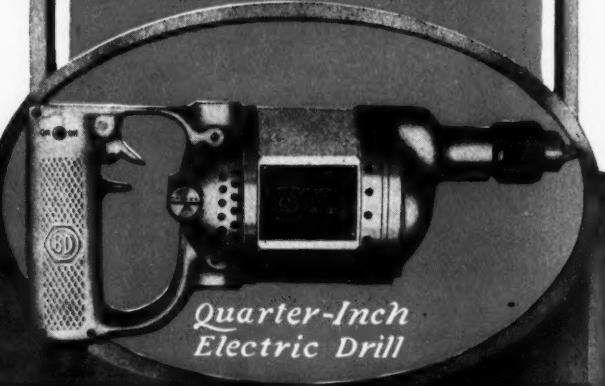
Cleaning valve stem guides with Fleming Valve Guide Cleaner.



Buffing inner tube for patching with Fleming Wire Wheel Brush.

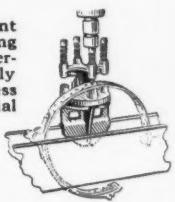
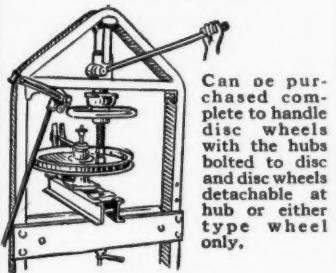


Cleaning carbon from valves and valve stems with Fleming Wire Wheel Brush.

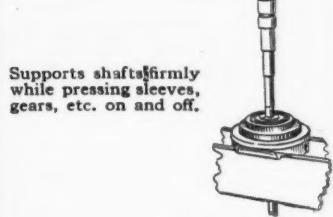


**Brake Reliner**

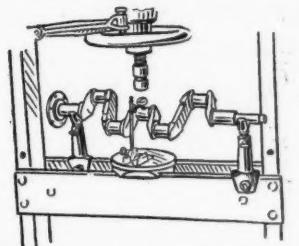
A quick, efficient means for relining external and internal brakes. Easily attached to Press by means of special bracket.

**Disc Wheel Truing Attachment**

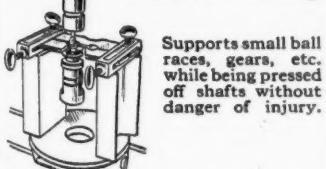
Can be purchased complete to handle disc wheels with the hubs bolted to disc and disc wheels detachable at hub or either type wheel only.

**Vertical Chuck**

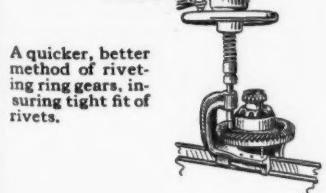
Supports shafts firmly while pressing sleeves, gears, etc. on and off.

**Truing Fixtures**

Enables operator to true shaft from bearing surface and straighten it without loss of time moving it.

**Puller Clamp**

Supports small ball races, gears, etc. while being pressed off shafts without danger of injury.

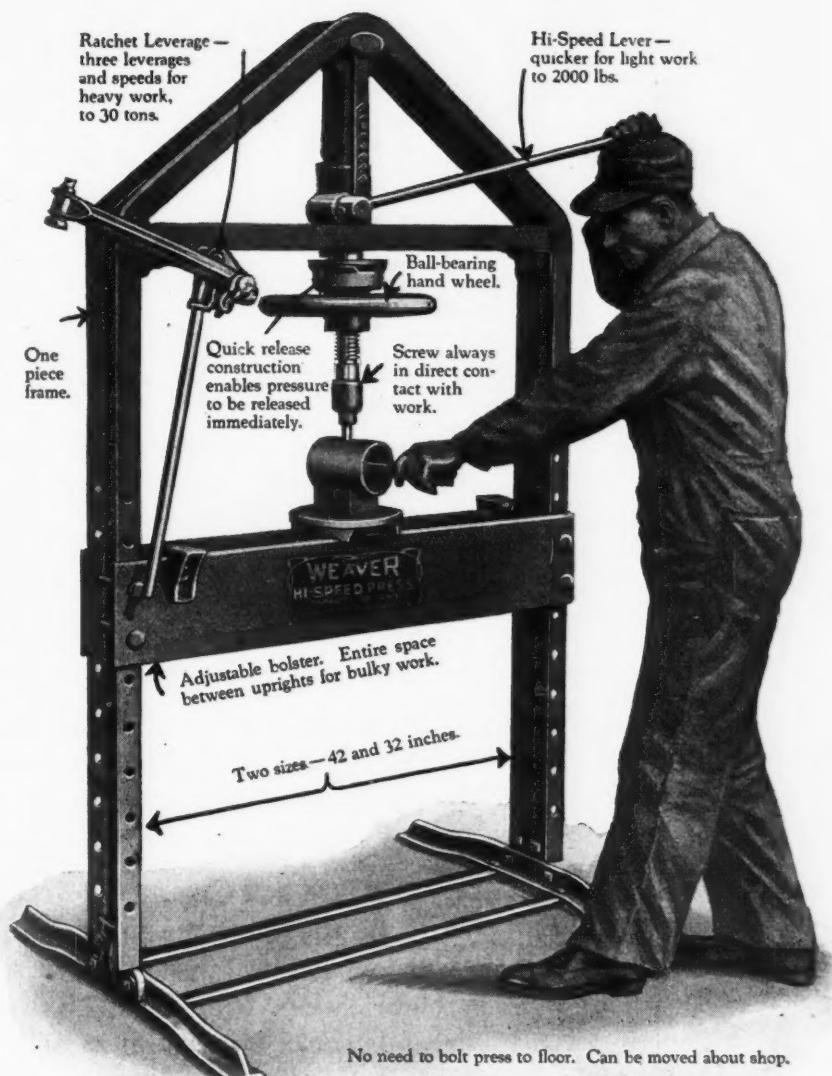
**Ring Gear Riveting Tool**

A quicker, better method of riveting ring gears, insuring tight fit of rivets.

# more jobs...less labor

with this

## WEAVER Hi-Speed Press



No need to bolt press to floor. Can be moved about shop.

The press shown above is 42 inches wide, for bulky work. Also made in 32 inch width

**Y**OU'LL find the WEAVER HI-SPEED PRESS 100% efficient for your present work. Better still, it will enable you to handle more varied work and increase your prestige and profits...by adding the Attachments shown on this page. Ask your jobber's salesmen how much they will help you and how little they cost. Or write us.

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**WEAVER CANADIAN CO. LTD., CHATHAM, ONT.**

ADV. PICARD-SOHN, INC., N. Y.



**PRICE 60¢ EACH**  
(Up to and including 4 in. diameter)  
(One to a Piston)

COMPRESSION TYPE 30c and up

INDIANA PISTON RING COMPANY, HAGERSTOWN, INDIANA, U. S. A.

J. H. TEETOR, President

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LOTS of folks don't understand why, in the last few years, it has become necessary to employ special methods to control the oil in a motor.

Motors formerly did not use an excessive amount of oil, they argue. And today, aren't motors made better than ever before?

It is a fact that motors are now made better than ever. But high speeds and high pressure oiling systems have made cylinder lubrication and oil-regulation a very difficult problem.

At high motor speeds great quantities of oil are delivered to the cylinder walls. The rings also have a tendency to "ride" the film of oil, rather than to scrape it downward, as is the case at low speeds.

The **PERFECT CIRCLE Oil-Regulating Piston Ring** has proved to be the complete solution of this problem, and is recognized as the most effective means of regulating cylinder lubrication. More than 100 manufacturers of motor cars and trucks now use it as original factory equipment. And it is the fastest selling replacement ring on the market. 1000 or more miles to the gallon of oil.

**DEALERS and GARAGEMEN:** A valuable book of piston ring information, useful every day, will be mailed you on request. Write for it.

# MOTOR AGE

Reg. U. S. Pat. Off.

VOL. XLVII

No. 10

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Subscriptions accepted only from the Automotive Trade  
 Entered as Second Class Matter Sept. 19, 1899, at the Post Office  
 at Chicago, Ill., under Act of March 3, 1879.

Permanent roads are a good investment—not an expense

## 90 Per Cent of World's Motor Cars on Our Highways

There are more than 17,000,000 motor vehicles in the United States—approximately 90% of all in the world.

And production is at the rate of 4,000,000 a year.

What is the saturation point?

Ask any one of the millions of motorists trying to make headway through the countless traffic jams on some of our concrete highways. He will tell you, from the standpoint of comfort and safety in driving, the saturation point is already in sight.

Not a very encouraging outlook, is it, for the man about to buy his first automobile?

So you see car owners and prospective car owners are both interested—and have an immediate task confronting them.

What are you going to do about it? Even now you are curtailing the use of your car because you do not want to endure the discomfort, inconvenience and danger of traveling on congested, narrow highways.

Your highway officials need your support. They can't do much unless you stand squarely behind them.

To delay building more highways wide enough and strong enough to meet all the requirements of modern traffic will cost you more money than will an adequate system of Concrete Roads and Streets.

### PORLAND CEMENT ASSOCIATION

A National Organization to Improve and Extend the Uses of Concrete

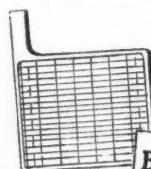
Atlanta	Denver	Los Angeles	New York	Salt Lake City
Birmingham	Des Moines	Memphis	Oklahoma City	San Francisco
Boston	Detroit	Milwaukee	Parkersburg	Seattle
Charlotte, N. C.	Indianapolis	Minneapolis	Philadelphia	St. Louis
Chicago	Jacksonville	New Orleans	Pittsburgh	Vancouver, B. C.
Dallas	Kansas City		Portland, Ore.	Washington, D. C.

# Growth



RADIO SETS: A reliable guaranteed line that you can sell with safety and profit. Send for descriptive matter and prices.

RADIO BATTERIES: Complete line to meet every radio requirement. A money-maker for you.



BATTERY PARTS  
and  
SHOP EQUIPMENT



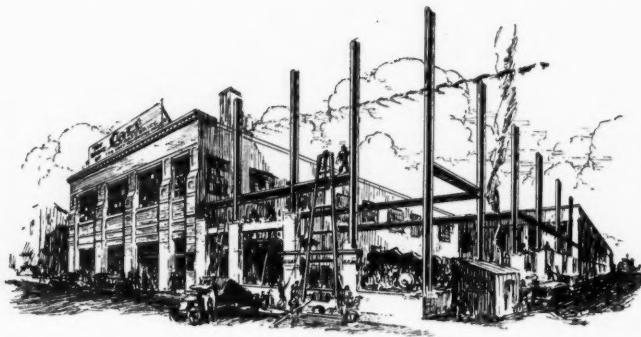
SHOP EQUIPMENT: Everything needed by the battery man at money-saving prices.



BATTERY PARTS: Special service to battery stations and assemblers. Send for catalog and quotations.



COLE



**T**HE history of this company has been a record of growth—a record of healthy and unbroken expansion, punctuated at regular intervals by a series of additions to our buildings and manufacturing facilities to meet the ever increasing demand for COLE products.

Now another big addition to the COLE factory is under construction. Again the COLE output capacity will be almost doubled in order to serve the steadily growing market for COLE products.

This forward march of progress can be directly traced to three outstanding features of the COLE manufacturing and merchandising policy:

First, rigid adherence to highly exacting quality standards, regardless of cost or competitive conditions; second, the maintenance of a reasonable schedule of prices based on actual merchandise value; and, third, a liberal dealer policy which permits the merchant to sell COLE products profitably.

## Cole Battery Sales Corp.

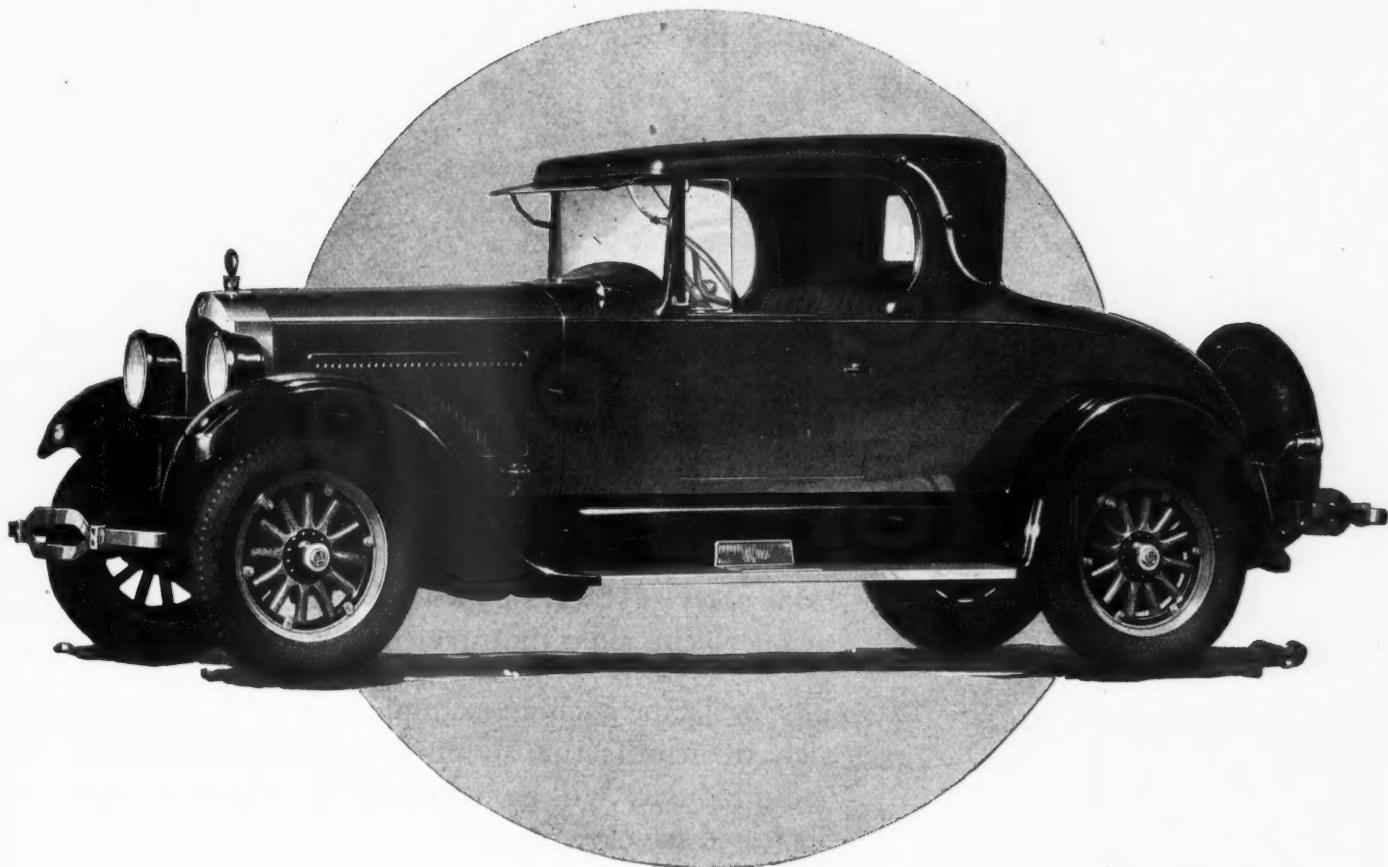
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**COLE**  
**BATTERIES**

**"THE BEST BY EVERY TEST"**

# STUDEBAKER



## The New Special Six Sport Roadster

A CAR that calls to the open spaces! A car with the "up-and-away" spirit! Trim as a greyhound, fleet as the wind!

Smart with its windshield wings, full-nickeled deep radiator shell, front and rear bumpers, and ornamental top braces. Comfortable with its deep, wide seat, upholstered in real chrome Spanish leather. Convenient to the limit with spacious baggage compartment and the exclusive Duplex roller enclosures that provide open or closed car advantages.

Studebaker built! All the quality assured by

Studebaker Standards—power, performance, riding comfort *plus* smartness to the last degree. The same world-famous chassis and 65-horse-power engine as in all Special Six models. Full-size balloon tires, high-crowned fenders and special steering mechanism add to its easy riding and driving qualities.

This is the real sport car of the times! Already Studebaker dealers have proved its wide sales appeal. A valuable addition to a line that meets every demand of style and price in the fine-car field.

THE STUDEBAKER CORPORATION OF AMERICA, SOUTH BEND, INDIANA

### STANDARD SIX

3-Pass. Duplex-Roadster . . . . .	\$1125
5-Pass. Duplex-Phaeton . . . . .	1145
5-Pass. Coach . . . . .	1295
3-Pass. Country Club Coupe . . . . .	1345
5-Pass. Coupe . . . . .	1445
5-Pass. Brougham . . . . .	1465
5-Pass. Sedan . . . . .	1545
5-Pass. Berline . . . . .	1600

### SPECIAL SIX

3-Pass. Duplex-Roadster . . . . .	\$1450
5-Pass. Duplex-Phaeton . . . . .	1495
3-Pass. Sport Roadster . . . . .	1535
5-Pass. Brougham . . . . .	1795
4-Pass. Victoria . . . . .	1895
5-Pass. Sedan . . . . .	1985
5-Pass. Berline . . . . .	2060

*Prices f. o. b. factory*

### BIG SIX

7-Pass. Duplex-Phaeton . . . . .	\$1875
5-Pass. Coupe . . . . .	2450
7-Pass. Sedan . . . . .	2575
7-Pass. Berline . . . . .	2650

*Note: Standard Six—4-wheel brakes, 4 disc wheels . . . \$60 extra  
Special Six—4-wheel brakes, 5 disc wheels . . . \$75 extra  
Big Six—4-wheel brakes, 5 disc wheels . . . \$75 extra*

THIS IS A STUDEBAKER YEAR



# W E L C O M E

## *Stewart-Warner*

The entry of Stewart-Warner into radio is a compliment to the radio industry and its possibilities.

We welcome such an example of success from another field of manufacture and merchandising. Inevitably, the radio industry will be quickened to higher activity and increased development.

We ourselves are selfish about it, because the new Stewart-Warner Custombilt receivers incorporate Erla Audio Transformers, Erla Variable Condensers, Erla Rheostats and Erla Potentiometers.

ELECTRICAL RESEARCH LABORATORIES, Chicago

E R L A

YOUR PROSPECT may never have owned a car but you will find that he knows Timken Bearings by name.



Your prospect may be a seasoned car-owner. He knows Timken Bearings by name and he also knows that they operate in a motor car without trouble.



So, the alert car salesman can pin one sales-point down hard, when he states—

“The car has Timken Bearings.”

# Reo Completeness in Terms of Profit

New Reo Roadster      20th Anniversary Sedan      Gold Standard Coupe

There are eleven products so that Reo dealers can sell in every field of motor transport—

The backing of public confidence in Reo, gained by twenty years of good-will building—

Real price moderation, due to Reo's completeness of manufacture—

And the many definite advantages of a single factory connection.

Profitable territory is open to good dealers, but applications for the valuable Reo franchise must be made immediately.

REO MOTOR CAR COMPANY      Lansing, Michigan

**REO**  
*The Gold Standard  
of Values*

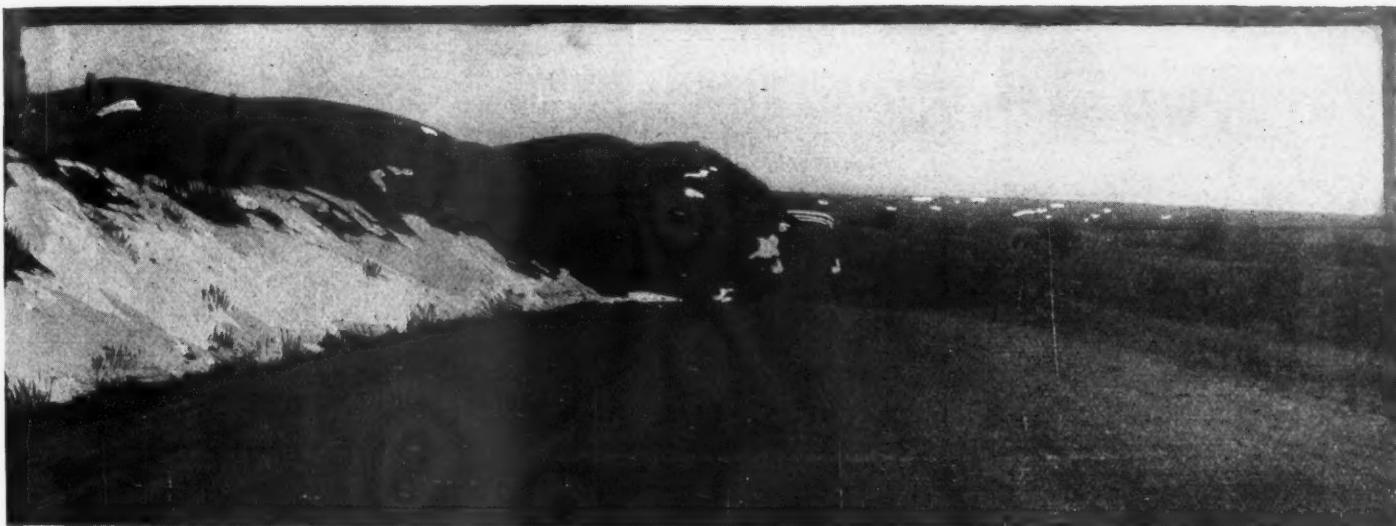
Pay-Enter Bus      Sedan Bus      Inter-City Bus

# MOTOR AGE

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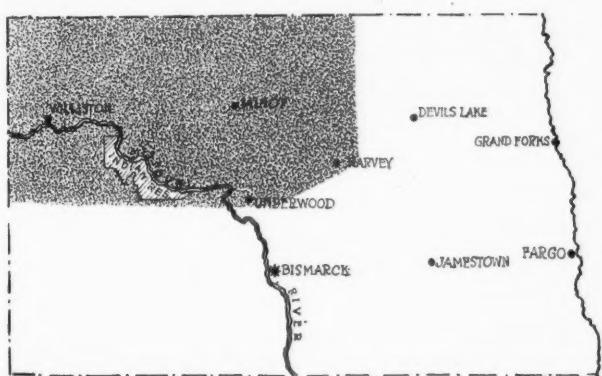
Chicago, March 5, 1925

No. 10



*A typical road in Northwest North Dakota. Roads for the most part are gravel, wide and kept in good condition, naturally an inducement for year 'round travel*

## Minot, North Dakota



TAKE a map of North Dakota and draw a line from the small town of Harvey southwest to Underwood, then west to the Montana line. Draw another line from Harvey straight north to the Canadian line and within these lines you have what is known as Northwest North Dakota—The Minot Empire if you please. Business in this section is better than it has been for many years. Along with the merchants, farmers, and business men in general the automotive merchants are enjoying a remarkable selling season. The dealers in this section for a good many years had a hard time of it. But they came through it all and stayed in business. They are stronger and better dealers for it. Contrary to many beliefs the North Dakota dealer is not in a sorry plight. Where he stands today is told in this article, written on the spot by a MOTOR AGE representative.

### *Where Automobile Dealers Refused to Take a Licking and Emerged from Economic Crisis Stronger Than Ever*

BY B. M. IKERT

THE automobile merchants of Northwest North Dakota have their heads up.

They are happy. Business is better than it has been for years. The bumper crop of 1924 did it. There is more money in Northwest North Dakota than there ever has been.

Crops produced last year, in some instances, are worth more than the land on which they were produced. The banks have more cash on hand than ever before. The farmers have liquidated about 50 per cent of their indebtedness.

Wheat prices are at the top and the farmers still own about 25 per cent of last year's wheat. In fact, the wheat still on the farms today is almost as valuable as the entire crop of 1923.

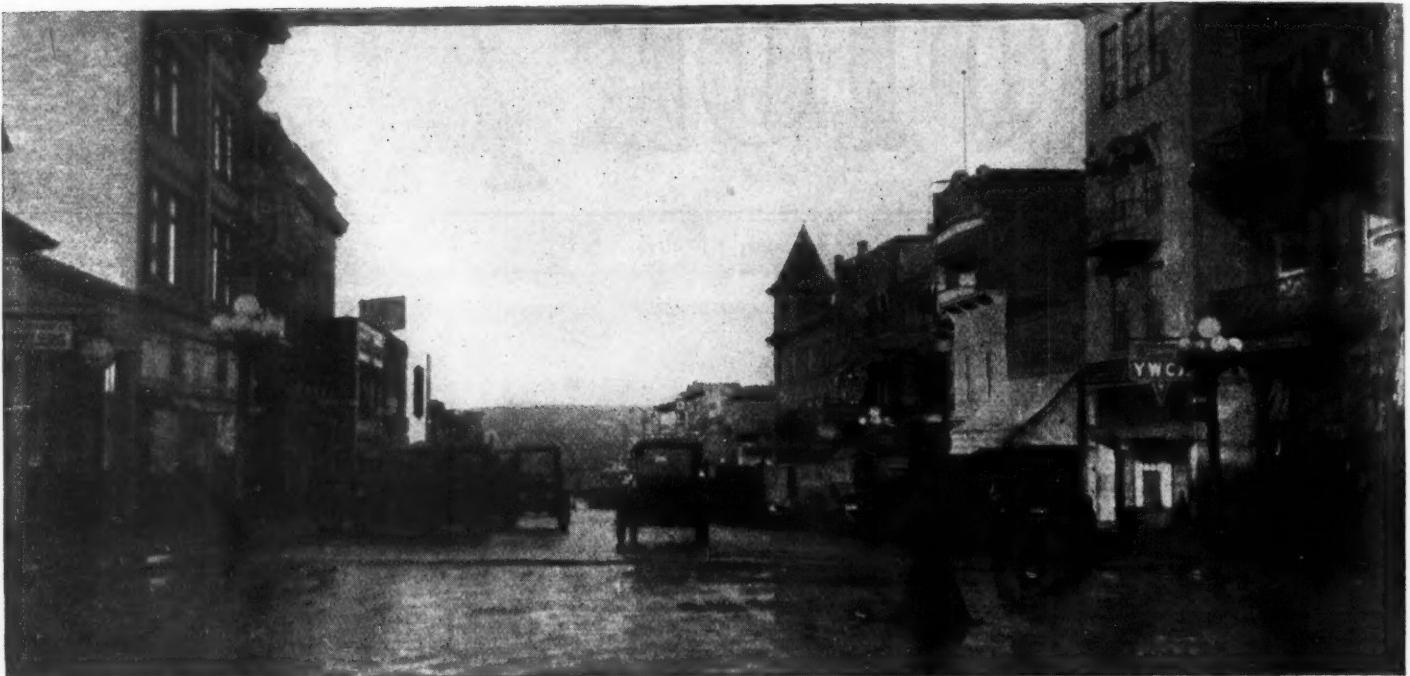
The foregoing indicates business will be good for many months to come, certainly until the new crop comes in and with May wheat where it is, prices seem fair to hold up.

#### *Automobile Trade on Sound Basis*

It is possible to pick almost any town in Northwest North Dakota and say of it:

The banks have plenty of money to lend. The farmers in the surrounding territory are selling their products. Excellent school buildings are being built in the town and in the rural sections around it.

The retail stores have plenty of customers who buy.



*Any morning or afternoon in the city of Minot, N. D. Cars closely parked, indicative of owners spending money in the stores, which for the automotive dealer means sales of cars, accessories and repair work*

Bus lines between towns have literally cut distances in half and are giving good transportation service.

The automobile merchants are doing a fine business. They are not overstocked with new cars nor used cars and for the most part the makers of the cars they represent are producing in answer to demands from the field. The dealers can make their trades on a sound merchandising basis.

The customer gets a fair allowance for his car. The dealer stays in business. And, this stability of the dealer simply means service to the car buyers of this community.

#### *Success Spirit is Strong*

To understand the success of the automobile merchants of this part of the country one must appreciate that this section has passed through a trying period of years. But after a period of anxiety, political unrest and waiting for agriculture to improve the faith of the people has been justified. They have come all the way back and the farmer, with the business man, is happy, contented and prosperous.

A majority of all the dealers in the larger cities and smaller communities have stayed in business throughout the trying years and the percentage of failures was no greater than in any other section of the country. Those who have passed out simply were not business men.

The spirit that wins is so strongly manifested here that dealers, especially in the western part, have emerged from a literal baptism of fire during some 5 or 6 years and today are stronger and better because of this experience.

It is especially in the area known as Northwest

North Dakota, that stretch of land running north to the Canadian border from Harvey, southwest to Underwood and thence directly west to the Montana border, where there is to be found a unified purpose. The people living in this area, commonly called the "Minot Empire," are working together in an unselfish and efficient effort to produce a prosperous and progressive community. Their objective, briefly, is to get 100,000 new settlers.

In the striving towards this objective the automobile dealers and operators of garages throughout the section are playing their part. They refused to take a licking that threatened them formerly and while many of them for several years had some mighty hard sledding to do, their doors never closed. True, they did not make money selling new cars, nor did they always make money selling repairs and accessories. They stayed in business largely because of the wonderful spirit of co-operation which exists in this state.

The dealers in most towns are not organized as a body, yet in traveling about the state, you will not find an instance of where one dealer speaks an unkind word

about his competitor. They are firm believers in the stability of North Dakota and, best of all, they have confidence in the business they are in.

Many have held that the North Dakota dealer for the most part is in sorry plight. This belief has largely been brought about from the assumption that the dealers here have to close their doors for months at a time owing to cold weather and snows. Nothing could be farther from the truth.

Winter plays no greater havoc here to the operation of motor vehicles than it does in the Eastern or Cen-



*Part of the building of the Stearns Motor Co., Overland and Willys Knight dealers. One of the things this establishment boasts is a complete Duco paint shop*

tral states. Not only that, but the 600 or more miles of federal air roads which have been built in Northwestern North Dakota since 1918 are crowned in such a way that snow in most cases simply is blown off. They are further protected with snow fences in spots where drifting might occur. And, should a heavy snowfall block a section of the road, the people of the community, as one dealer said, are "good enough sports to lend a hand and dig out." People will go to town and they are going in their cars. Distances are vast and a team of horses is out of the question. Consequently you see almost every day in a city like Minot, streets jammed with motor cars. And the cities are offering every inducement for the continuation of this.

#### *Progressive People and Business*

Take the city of Minot. What is true of her is true in most of the smaller towns, to a lesser degree. In Minot you have a progressive city of some 10,000 people, excellent railroad facilities, fine hotels, stores with the most up-to-the-minute merchandise, theatres and the famous Roosevelt Park with its magnificent zoological gardens, athletic field, swimming pool and dozens of other attractions. An average of 2,500 people visit the park every Sunday during the summer months. This means sales of gasoline, oil, tires, for the dealers in and about Minot.

Northwest North Dakota has some of the finest roads in the state. The highway running from Minot to Williston leaves nothing to be desired. From Kenmare west through Crosby a splendid state highway is under construction. The area is well served by railroads with the exception of McKenzie county, which needs more adequate transportation.

County and township roads feeding the Federal-State highways are well maintained so that motoring anywhere any time of the year is possible. The highways throughout this section are well blazed and the territory is traveled by thousands of motorists each year going to and from Yellowstone and Glacier National Parks. This means vast sums of money left in the state for hotels, meals, fuel, oil, accessories and supplies.

About 90 per cent of the Federal aid roads of Northwestern North Dakota lead into Minot and the dealers of this city have a vast territory from which to draw. It is nothing for a man to come all the way from the Montana border or from New Rockford to buy a new car in Minot. He knows that in Minot he will see the latest model of the car he favors and with the excellent gravel roads leading in all directions it offers no hardships for

him to drive the new car home. Distance means nothing to the average person of North Dakota. People from Williston, in the far western end of the state think nothing of driving to Minot, over 100 miles away, taking in a show or two, and then driving back home. The roads are hard, gravel for the most part, and plenty wide enough for three cars in most places. Consequently a high average road speed can be maintained and most drivers in this state take advantage of it.

This high road speed has had a marked effect on repair work. People drive hard and for the most part do not make the small adjustments occasionally necessary and the result is that cars come into the shops and garages in pretty bad shape. Most dealers and garagemen will tell you that the average car owner here drives his car until a complete overhauling is necessary or he junks it and buys a new car. There still is much of the zest of driving a new car. New models have a strong appeal and if the old car looks a bit shabby and especially if the fellow on the next farm has a new car, in comes Mr. Farmer to Minot to talk about a new car.

The most gratifying thing to the dealers here is that 50 per cent of the new car sales are for cash. The farmers have money and they spend it.

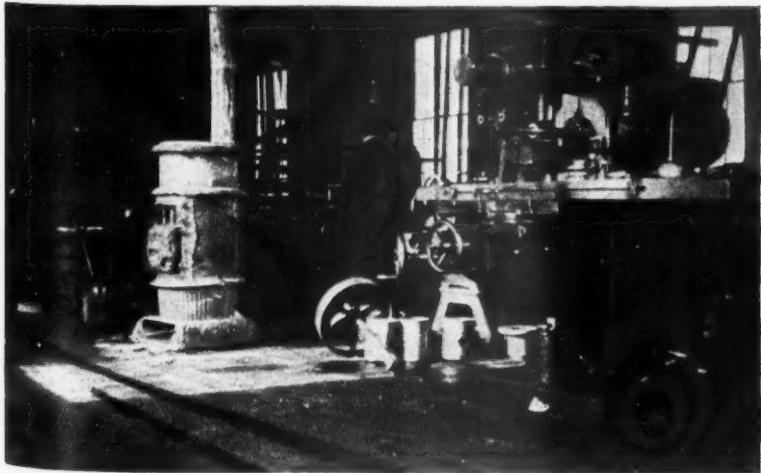
A great many of the farmers who formerly owned tractors have gone back to horses, not because the tractors were no good, but because during the time of depression they could not get fuel with which to operate their machines. No one would extend them credit on gasoline, kerosene, or lubricating oil.

#### *Effect of Diversified Farming*

That is why to-day you will find many farmers buying two and three used cars from dealers in the city, painting them up in striking color combinations and then trading them off to the Indians on the reservation for horses. However, with the new era of prosperity, there is every indication that this year will see a material increase in the sales of tractors. There are many Fordsons in the state.

Remarkable progress has been made throughout this entire region in the development of diversified farming. The farmer of Northwest North Dakota has learned not to depend upon a single crop. Last year this area produced remarkable crops of wheat, rye, barley, oats and flax. It produced and ripened a surprising amount of good corn and the development of the dairy business has gone forward rapidly.

The greater part of the State's deposits of lignite coal



*And for those who have an idea the small town is not well equipped with machinery, these views of the Northwest Machine Shop at Minot will be of interest. This shop can handle any kind of job as it is equipped with lathes, shapers, milling machines, grinders, etc.*

lies in the Northwest section and the production now is about 2,000,000 tons. Many farmers have their own small mine on their farms or haul it from a nearby mine. The cost is small and the average family's fuel bill in North Dakota is said to be less than half that of the average family in the Central States.

Up in North Dakota you find everyone saying it is a great country. Business men are all for it. They boast their town and the towns around. You will not find the business men, for example, of Williston, Minot, Kenmare, Harvey, or Crosby, saying mean things about their fellow business men in other sections of Northwest North Dakota, or of the entire state for that matter. They will tell you that Minot is one of the finest cities of the Northwest, that the entire region is a coming one and they are ready always to take their coats off and lend a hand wherever possible.

#### Trade Cars for Coal

Cars are selling in quantities that are encouraging. During the month of January, when everyone not in the know thinks everything around North Dakota is snowed under, the dealers of Minot and other cities did a flourishing business. When you sell 31 new cars and 14 used ones from a single dealer establishment in a town of 10,000 people, you as a dealer are doing mighty fine. That is precisely what was done by one organization in Minot. And it was not the Ford dealer, either. The cars mentioned were in the \$1,500 to \$2,000 class.

To those who have wondered in the past how the North Dakota dealers fared during the periods of depression let this instance be cited. As is well known, North Dakota is rich in lignite coal fields. This being the case there are many engaged in the mining of coal. Coal around Minot sells at the mines for \$2.25 a ton. In Minot it costs \$3.03 a ton and 60 cents to haul it. A man operates a mine, let us say. He needs cars and trucks for hauling the coal. The dealer needs coal for his establishment and the two get together and cars were and now often exchanged for coal.

Not only that. The other day a coal mine operator came into a dealer's place of business and asked about several used cars which the dealer had on hand. The thought behind it all was simply this. The coal mine operator buys the used cars, takes them out to the mine and sells them to the miners for labor. It must be remembered that most of the indebtedness of previous years stayed in the state. Thus all the money which was made on last year's bumper crop was used to liquidate debts within the



New home of the Nash dealer in Minot. In the distance is shown a small part of the Dodge Brothers dealer's building. Excellent salesrooms are a feature of the Minot automotive establishments

state and naturally this has been used to advantage in building up local enterprises.

For the most part the automobile service stations and garages in Northwest North Dakota are pretty well equipped with shop machinery and tools. This is due, no doubt, to the fact that these shops have to work on all makes of cars. And yet, certain kinds of equipment is lacking which one would be inclined to believe indispensable. Out of 14 shops, for example, there are only six which have engine stands and out of these six four are home made affairs. The fifth shop does not use its stand at all, claiming that it takes too long to place engines in and out of it. That leaves just one engine stand which is used strictly as such, inasmuch as some of the home made stands are in reality nothing but trestles on which other units also can be placed when being worked upon.

#### Flat Rate Gaining

Very few of the dealers use the flat rate system of selling service work. In the smaller towns, flat rate has not as yet made much headway and in almost every shop you will find the work sold on the so much per hour basis. But this will not be for long. It is a pretty well known fact that a shop which has to work on all kinds of cars, trucks and tractors as do these shops in North Dakota, finds it very difficult to launch right in and sell its repairs at fixed prices. With more and more of the car makers adopting the flat rate system there is every reason to believe that even the smallest shop in this section or any other section of the Dakotas will sell its work at a fixed price in direct competition with the dealers' schedules of fixed prices for the same operations. In the larger cities of North Dakota, of course, the dealers for such cars as Dodge Brothers, Buick, Studebaker, and others, adhere closely to the flat rate operating schedules suggested down by the factories.

The success of the North Dakota dealers is due also to the fact that they are first of all—business men. They would have been successful in any other line. They had vision during the trying years of 1920 and especially those dealers in the western part of the state which up to last year did not have a real crop since 1916. Those dealers knew how to convert part of their salesrooms into garages to help pay the overhead. They took on battery work, tire work, and the like. Many of them sold tractors and farm machinery. They went on a cash basis for repairs and said "no" when credit on parts or repairs was asked for. The farmer came first with the banks and the banks thought the dealers could wait. So the dealers had to run the whole show alone. They learned how to carry on their business under the hardships induced by necessity.



Home of the Frosaker Motor Co., an imposing structure for a city of 10,000 and devoted entirely to the sales and service of Studebaker, Chrysler and Chevrolet cars

# Your Banker Is Your Friend

*As a Modern Institution He Is More Than a Money Changer—the Automotive Business Has Won His Respect and He Is Ready to Help Make It Profitable*

By SAM SHELTON

## PROFIT SERIES

*Turnover of Capital—No. 3*

THE banker is a shrewd business man. In the fabric of modern industry he is more than a money changer. He is a definite constructive unit in practically every business enterprise. Without the modern development of his function business could not be conducted on the vast scale that prevails today.

Banking is a business in itself and when it is well managed it is a profitable business. The motive of the business of banking is the same as that which actuates all other business—profit.

But the banker's stock in trade is the medium that makes all other business possible—money or its equivalent, which is credit. For this reason the banker has a direct interest in every business that uses his services in any way.

The interest the banker takes in his customers has in recent years extended itself from a position of close observation to one of active participation in their affairs if such is desired or necessary.

The automobile business in its early stages was not regarded with a great deal of sympathy by the majority of bankers. The automobile was looked upon as a novelty at first and later as a luxury, and there was a feeling among conservative bankers that money spent for automobiles and their upkeep was just so much taken away from the necessary business of supplying the world with food and clothing and shelter.

### Early Views of Bankers

In other words the ancient and conventional forms of commercial enterprise held the spotlight in the banker's attention and the automobile was regarded somewhat as an article of little ability upon which a fascinated people was willing to waste a lot of money.

For that reason it was a long time before bankers were willing to advance any money to the individual to be used in the purchase of an automobile and the dealer who needed money for the conduct of his business was out of luck unless he could find a thrifty doctor or lawyer, with the speculative instinct, who was willing to take a chance.

That conditions have changed is shown by the fact that today probably

75 per cent of the purchase money for automobiles is loaned either directly or indirectly by banks.

### Most Automobiles Sold on Time

Only little explanation is necessary to bear out this statement. Practically all authorities will agree that at least three-fourths of the automobiles are sold on a deferred payment plan. And in its essence the deferred payment plan is this: The customer borrows the money to pay the dealer and the repayment is made on a monthly basis.

## PROFIT

**"Turnover Creates the Margin" will be the subject of the Profits article in**

**MOTOR AGE  
NEXT WEEK**

The money usually is advanced directly by a man or corporation specializing in this form of financing, but in the long run it is the banker who lends the money. The difference is that the banker makes his loans in large amounts to the finance company which in turn makes smaller loans to individual car buyers. The notes of the car owner, secured by the automobile itself, really constitute the ultimate collateral upon which the banker advances the money.

This changed attitude of the banker is due to the profound influence the automobile has had in our economic life. From an uncertain vehicle of pleasure it has become a dependable unit of transportation of both passengers and commerce. Instead of the luxury that it was once considered it is now universally accepted as a practical necessity in the life of America. It has become a definite creator of wealth and as such it demands and receives the recognition of the banker.

The product having demonstrated its utility and standardized value it only remains for the dealer to prove his worthiness in order to merit the co-operation of his banker. He best proves this worthiness by so conducting his business that it returns a profit. The banker looks to the profit. He is not deceived

by volume that has in it no profit. Whenever he still harbors some suspicion of the soundness of the retail automotive business it is traceable to low business capacity of some of the units in the trade. An unprofitable business is a thing to be shunned in the banker's life.

But the progressive automotive merchant finds that this banker is his friend. The automotive merchant who makes every sale net him a reasonable profit always is welcomed to the banker's sanctum. He who gives away his profit in used car allowances meets the icy stare he deserves.

The automotive merchant who does business on the profit-making principles that have been set forth in this series of articles certainly will merit the co-operation of his banker and unless that banker is himself incompetent he will receive it bountifully.

This is because the modern banker recognized the value to his own business of helping other businesses to prosper. Other businesses and individuals are the customers of the bank. They make deposits, which provide the bank with a great deal of its working capital, and they borrow from the bank, thus enabling it to make a profit. The more deposits and the more good loans, the greater the prosperity of the banker.

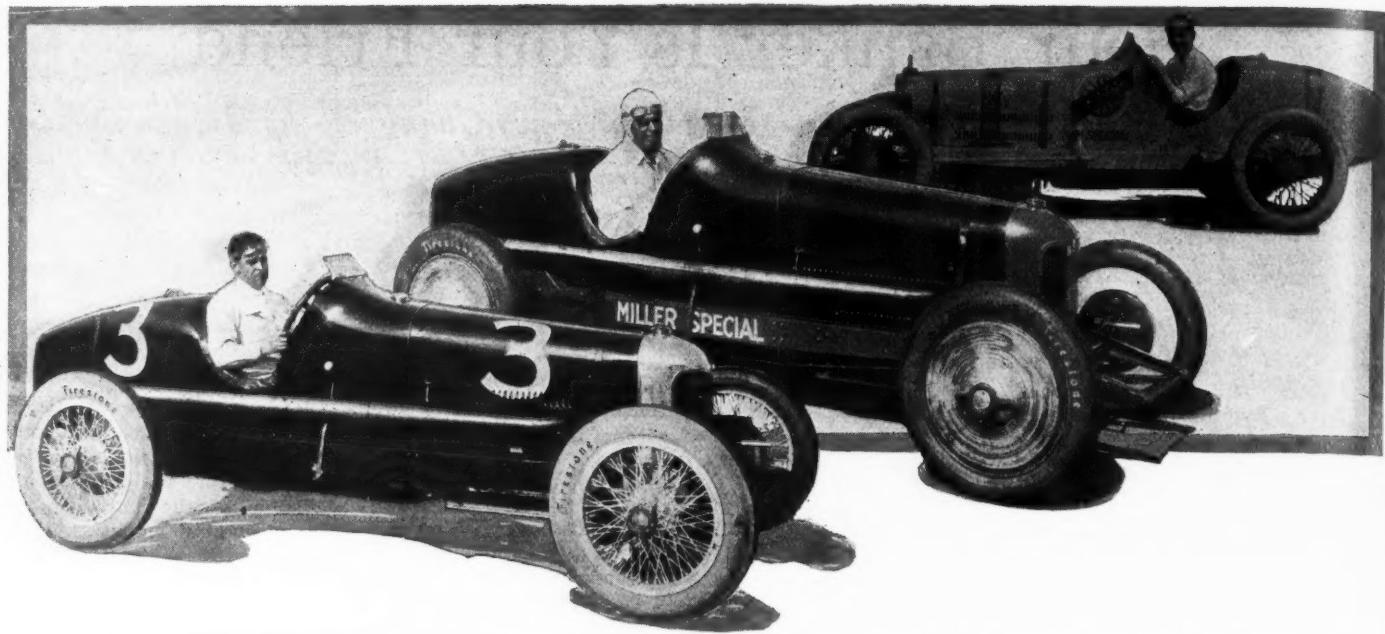
Hence it is merely good business for the banker to take an interest in his customers and advise them in ways that will help to increase their depositing and borrowing capacities.

### Bankers Like Good Businessmen

The dealer who abides by the fundamentals of profitable business conduct should have no fear of his banker. He will be a welcome visitor at the grained window or at the mahogany desk. He will find the banker willing to extend special assistance. The banker will advise and suggest and often will help his good and perfectly frank customer over a difficulty that may have appeared insurmountable.

The larger banks employ specialists whose duties are to lend expert advice and counsel to business customers in need of them. The smaller banks are not always able to provide specialists for this work, but the general banker himself possesses a world of wisdom that not always is fully appreciated.

Give your banker a chance to help you. He is your friend and his advice may put you on the road to profit.



*Three likely contenders for 1925 A. A. A. racing championship. Left to right—Bennett Hill, Tommy Milton and Earl Cooper. All three won high honors in 1924.*

## \$225,000 in Prizes to Race Drivers Last Year

*1925 Championship Season Opens With Prospects of Surpassing Brilliant Records Made in 1924*

HERE is no more fit way to start a resume of the 1924 automobile racing championship than with an eulogy of the career and accomplishments of the champion of the year, James Anthony Murphy. His death was an untimely blow, not only to automobile racing, but to future drivers of automobiles.

Murphy was a shining example of all that automobile racing stands for or hopes to accomplish. He was a champion in every sense of the word; a gentleman, a race driver and a mechanical genius. To him can be attributed many of the improvements on the racing automobile of today, the experimental cost of which ran into many thousands of dollars.

While Murphy won great sums of money as prizes during his career and

By PAUL DUMAS

left quite an estate in the way of worldly goods and real estate, he spent possibly as much again to perfect devices that are today used on the automobile that is driven on our city streets and country roads. At the time of his death he had just completed, in conjunction with Harry Miller, the building of a front wheel drive racing car, which when finally tuned up should develop into one of the fastest racing cars in the world.

### Precautions Taken For Safety

Someone once said that the automobile racing driver was the guinea pig of the automobile industry. This is far from true. The specially constructed board speedways of today are so built that every possible precaution is taken to safeguard the lives of the drivers and hold the cars at the great speeds at which they are able to obtain. To the racing driver this is only their means of livelihood, and no one could convince them that there is as much danger in driving a car at the 135-mile clip at which they drive on the speedway as is encountered by the average automobile driver who speeds along the highway at 40 miles an hour in more or less congested traffic.

To automobile racing can be attributed the experimental work and development of such automobile necessities of today as battery ignition with distributor head,

four wheel brakes, balloon tires, countless developments in types and constructions of metal parts, disk wheels, spark plugs, force feed oiling systems, shock absorbers and countless other incidentals that go to make up the highly developed commercial car of this time. There is not a racing driver of the past or present who has not given to the industry some device or work that has benefitted every automobile user. A great many of them work in the experimental departments of automobile factories in their off seasons, when there are any, and this is really the time that most of them enjoy, for here they can develop the ideas that have occurred to them in the heat of the races in which they participated.

At the beginning of each year, the Con-

<b>1925 Schedule of Championship Races</b>	
Los Angeles, Cal.	Feb. 29
Fresno, Cal.	April 30
Charlotte, N. C.	May 11
Indianapolis, Ind.—500 mi	May 30
Altoona, Pa.	June 13
Baltimore-Washington Speed-way, Laurel, Md.	June 20
Altoona, Pa.	Sept. 7
Fresno, Cal.	Sept. 30
Baltimore-Washington Speed-way	Oct. 10
Charlotte, N. C.	Oct. 24
Los Angeles, Cal.	Nov. 26

### How Points Are Awarded

The following schedule shows the basis on which points are awarded by the A. A. A. in championship automobile races:

#### Points Allowed First 10 Places

Dist. in Miles	1	2	3	4	5	6	7	8	9	10
100	200	110	60	35	20	15	10	5	5	5
150	300	160	90	50	30	20	15	10	5	5
200	400	210	110	60	40	25	15	10	5	5
250	500	260	140	80	50	35	25	15	10	5
300	600	320	170	90	55	35	25	15	10	5
350	700									
400	800	420	220	120	70	45	35	25	15	10
450	900	520	270	140	90	60	50	40	35	30
500	1000	520	270	140	90	60	50	40	35	30

*Following is the official record of winners in 1924 championship races, and the position in which drivers finished at each race:*

**Los Angeles, Cal., Feb. 22, 1924—250 Miles**

Driver	Car	Time	Ave. M.P.H.
Fengler	Wade Spec.	2:09:14.60	116.00
Wonderlich			
Hartz			
Hill			
Milton			
Hearne			
Murphy			
Cooper			
Boyer			
Durant			

**Indianapolis, Ind., May 30, 1924—500 Miles**

Driver	Car	Time	Ave. M.P.H.
{ Corum	Duesenberg	5:05:23.51	98.23
{ Boyer	Spec.		
Cooper			
Murphy			
Hartz			
Hill			
De Paolo			
Mourre			
Vail			
McDonogh			
Comer			
Van Ranst			

**Altoona, Pa., June 14, 1924—250 Miles**

Driver	Car	Time	Ave. M.P.H.
Murphy	Miller Spec.	2:10:57.00	114.70
Comer			
Mourre			
McDonogh			
Hartz			
Cooper			

**Syracuse, N. Y., Sept. 15, 1924—150 Miles**

Driver	Car	Time	Ave. M.P.H.
Deusenberg			
Shafer	Special	1:54:25.20	70.05
Hill			

Milton

{ Corum  
Vail  
Wilson  
Ansterberg

**Kansas City, Mo., July 4, 1924—150 Miles**

Driver	Car	Time	Ave. M.P.H.
Murphy	Miller Spec.	1:18:39.20	110.84
Milton			
Hill			
Fengler			
Cooper			
Hartz			
Mourre			
Morton			
McDonogh			
De Paolo			

**Altoona, Pa., Sept. 1, 1924—250 Miles**

Driver	Car	Time	Ave. M.P.H.
Murphy	Miller Spec.	2:11:48.40	113.95
Comer			
Milton			
Shafer			
Cooper			
Mourre			
Fengler			
Cariens			
McDonogh			
Hartz			

**Syracuse, N. Y., Sept. 15, 1924—150 Miles**

Driver	Car	Time	Ave. M.P.H.
Deusenberg			
Shafer	Special	1:54:25.20	70.05
Hill			

De Paolo  
{ Comer  
{ Hartz  
Cooper

**Fresno, Cal., Oct. 2, 1924—150 Miles**

Driver	Car	Time	Ave. M.P.H.
Cooper	Weaver Spec.	1:25:09.06	105.68
Hill			
Milton			
Comer			
McDonogh			
Ansterberg			

**Charlotte, N. C., Oct. 25, 1924—250 Miles**

Driver	Car	Time	Ave. M.P.H.
Milton	Miller Spec.	2:06:56.09	118.17
Cooper			
Hill			
De Paolo			
Hartz			
Wonderlich			
Shafer			
Comer			
McDonogh			

**Los Angeles, Cal., Dec. 14, 1924—250 Miles**

Driver	Car	Time	Ave. M.P.H.
Hill	Miller Spec.	1:58:18.6	126.9
Hartz			
Milton			
Comer			
Shattuc			
Wilkinson			
Shafer			
Bordino			
Hearne			

test Board of the American Automobile Association receives application for, and allot to the different speedways certain dates for their races which are known as championship events, and at which eligible drivers are entered. Points are allotted according to the number of miles to be run during each event and it is obligatory that the five leaders in the championship enter at each event. During the season of 1924, nine of these championship races were held in the United States, two at each Los Angeles, California, and Altoona, Pennsylvania, and one at each Indianapolis, Indiana; Kansas City, Missouri; Fresno, California; Charlotte, North Carolina, and Syracuse, New York.

The Indianapolis speedway is a specially constructed two and one-half mile

brick track on which the annual 500-mile Memorial Day classic is held. This is the biggest automobile racing event in the United States and draws the largest crowd that is assembled at any sporting event in the country. Last year the attendance was 162,000, which is far greater than the attendance at any of the football, world's championship baseball, horse race or any other type of sporting event. The Los Angeles, Altoona and Charlotte tracks are a mile and a quarter specially constructed board speedways, while that at Fresno is a one mile board track.

**Big Prizes Distributed**

During the season of 1924 the drivers entered in the championship events covered a distance of 2200 miles for which

the Contest Board distributed prize money in the amount of \$225,000.

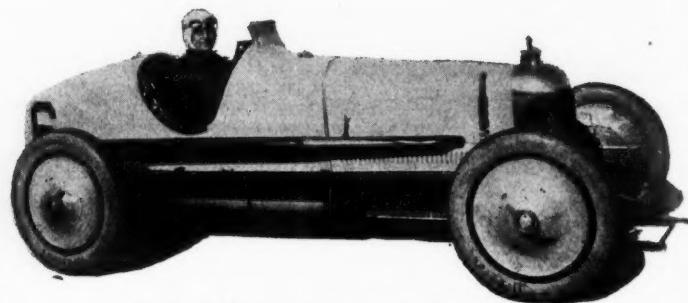
The 1925 A. A. A. schedule is much more extensive than the 1924 program. There are 11 championship events scheduled thus far and there will possibly be three or four new mile and a quarter board speedways to be added to the list of those already completed. To take care of possible contests on speedways not yet completed the Contest Board had so arranged the allotted sanctions that it will be possible to assign several more without interference or overlapping of events already scheduled. The interval between June 20 and Sept. 7 has as yet not been filled with official sanctions, thus allowing an opportunity for possible races on tracks now in process of construction.



Four racing stars who sacrificed their lives in 1924. Left to right—Jimmy Murphy, winner of championship, who was killed September 15 at Syracuse, N. Y.; Dario Resta, killed September 3 at Brooklands, England; Joe Boyer, killed September 1 at Altoona, Pa., and Ernie Ansterberg, killed October 18 at Charlotte, N. C.



Harry Hartz set for a speedy dash.



Harlan Fengler on the bricks at Indianapolis.

The mile and a quarter board track with its precipitous banks has proved itself the fastest and safest type of speedway to date. The old Los Angeles track at Beverly Hills, Cal., was considered the fastest in the country with a record of 116 miles per hour for the 250 mile distance, made by Harlan Fengler early last year. With the building of the same type track at Charlotte, N. C., this average was raised to 118.17 by Tom Milton. Ernie Ansterberg of the Duesenberg team was killed on this same track after setting the track lap record during practice. All of these records for the 250 mile distance were broken, however, at the inaugural race on the new Los Angeles track at Culver City where Bennie Hill turned the two hundred and fifty miles at an average of 126.9 miles per hour. This race marked the first time that the 250 miles had ever been run under two hours, Hill's time being 1:58:18.6 for the distance.

With an increasing number of super-charger installations under way for the 1925 season and the consequent improvements that result after the first layouts

### How 1924 Championship Points Were Distributed

Driver	Los Angeles 2/22/24	Indianapolis 5/30/24	Altoona 6/14/24	Kansas City 7/4/24	Altoona 9/1/24	Syracuse 9/15/24	Fresno 10/4/24	Charlotte 10/25/24	Los Angeles 12/14/24	Total points accrued.	Championship position.
Fengler	500	.....	.....	48	15	.....	.....	35	.....	563	8
Wonderlich	260	.....	.....	.....	.....	.....	.....	50	260	285	10
Hartz	140	140	50	21	5	.....	160	160	140	666	6
Hill	80	90	.....	84	.....	160	160	500	500	1214	3
Milton	50	.....	25	156	140	90	500	140	140	1101	4
Hearne	35	.....	.....	.....	.....	.....	.....	10	45	45	15
Murphy	25	270	500	300	500	.....	.....	.....	.....	1595	1
Cooper	15	520	35	30	50	30	300	260	.....	1240	2
Boyer	10	.....	.....	.....	.....	.....	.....	.....	10	21	21
Durant	5	.....	.....	.....	.....	.....	.....	.....	5	25	25
Corum	555	15	.....	.....	.....	.....	.....	.....	570	7	7
DePaolo	60	.....	.....	3	.....	50	.....	80	.....	193	12
Comer	25	260	.....	260	35	50	50	15	80	725	5
Mourre	35	140	15	35	.....	.....	.....	.....	.....	225	11
Vail	32	2	.....	.....	.....	.....	.....	.....	34	17	17
McDonogh	30	80	6	10	.....	30	10	.....	.....	166	13
Van Ranst	8	.....	.....	.....	.....	.....	20	.....	.....	8	24
Wilson	.....	8	.....	.....	.....	.....	.....	.....	.....	8	23
Ansterberg	.....	5	.....	.....	.....	.....	20	.....	.....	25	18
Morton	.....	.....	9	.....	.....	.....	.....	.....	.....	9	22
Shafer	.....	.....	.....	80	300	.....	25	25	430	9	9
Cariens	.....	.....	.....	15	.....	.....	.....	.....	.....	15	19
Shattuc	.....	.....	.....	.....	.....	.....	.....	50	50	50	14
Wilkinson	.....	.....	.....	.....	.....	.....	.....	35	35	35	16
Bordino	.....	.....	.....	.....	.....	.....	15	15	15	15	20

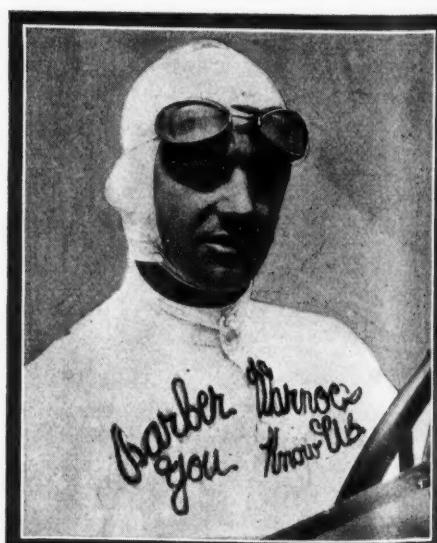
### FINAL CHAMPIONSHIP STANDING OF DRIVERS IN 1924 RACES

Driver	Points
1—Murphy	1595
2—Cooper	1240
3—Hill	1214
4—Milton	1101
5—Comer	725
6—Hartz	666
7—Corum	570
8—Fengler	563
9—Shafer	430
10—Wonderlich	285
11—Mourre	225
12—De Paolo	193
13—McDonogh	166
14—Shattuc	50
15—Hearne	45
16—Wilkinson	35
17—Vail	34
18—Ansterberg	25
19—Cariens	15
20—Bordino	15
21—Boyer	10
22—Morton	9
23—Wilson	8
24—Van Ranst	8
25—Durant	5

there is reason to believe that an average close to 130 miles per hour will be attained before the end of the year. Then there is the front wheel drive which has been applied to one or two of the cars that have competed during the winter in California. The potentialities and practical data concerning the front wheel drive as now laid out that will be gathered during the coming season should provide a fund of valuable technical knowledge applicable to the design of more conservative types of motor transportation vehicles.

The piston displacement limits for 1925 remain unchanged, as in 1924, at 122 cubic inches. The same holds true regarding the minimum weight limits. In the meantime designers here and abroad are actively engaged on the drawing board, in the shop, on the test block and track, to have ready the lighter and smaller cars for the 1926 season during which all competitors will be held to a

maximum engine size of 91.5 cubic inches displacement.



L. L. Corum as he appeared at Indianapolis when driving a Barber-Warnock special Ford.

# Letters to the Editor

## A Case of Unauthorized Use

To the Editor of MOTOR AGE:

It has come to my attention that in your issue of MOTOR AGE of Dec. 11 there appeared an article—top of center column, page 37—inferentially questioning the effectiveness of the Maryland automobile title law as a preventive of automobile thefts. This article states that the peak of thefts in Baltimore since the law was enacted had been reached in November of this year (1924) when 174 cars were "stolen" from the streets of this city. While it is true that the number of cars is correct, this constitutes only a half truth and does not give a fair picture of the accomplishments under the title law.

Of the 174 cars taken from the streets of the city during November, all but 14 had been recovered and restored to their owners before the end of the month. Since then several others have been recovered.

The Baltimore police department and this office no longer, after several years of observation, consider a large proportion of the cars taken from the streets of the city as stolen. They are what we consider cases of "unauthorized use" and are so handled where the guilty party is apprehended and tried. In the very, very large proportion of such cases the car, after being stolen, is, within a few hours, found abandoned somewhere within the limits of the city or its suburbs. These are cases devoid of actual intent to steal and illegally dispose of the car which has, as a matter of fact, only been taken for the purpose of a "joy ride."

So far as the accomplishments of the Maryland title law, in checking automobile thefts by professional criminals is concerned, the statute has more than justified its enactment—and continues to do so every day.

I should be glad to have you give some publicity to this as an offset to the article in the Dec. 11 issue of MOTOR AGE.

Very truly yours,

E. AUSTIN BAUGHMAN,  
Commissioner.

## About Automobile Accidents

Indianapolis, Ind.

To the Editor of MOTOR AGE:

We are daily reading and hearing discussed the subject of "Death by Automobile." While it is the duty of everyone to do everything possible to prevent all accidents it is also the duty of the motor car dealers to protect their own interests when the wrong impression is being given the general public.

It is natural for newspapers to feature a death. Particularly so when it is an accidental one. That is what sell their papers.

We can also expect the "reformers" to busy themselves with the condemnation of the motor car. We are experiencing a period of reforms. This is only natural when business is somewhat below what we would like to have it. People can always find fault with something and especially so at this time.

Unless both sides of this question are presented to the public the effect will, in time, have a tendency to turn public opinion against the motor car. This will mean loss of business rightfully due the industry.

In many cases it is not the fault of the car or driver. It is true there are many careless drivers. They should be punished and punished severely. But also the "jaymaker" should be punished likewise. Newspapers should be made to consider the headlines "Killed by Jaywalking" instead of always featuring the automobile in such headlines.

If the punishment for jaywalking in the streets was similar to the punishment for a motor car driver driving on the sidewalks there would be less accidents.

The motor car is safer today than it has ever been. Better construction. Better steering mechanism. Better brakes. Better material. In fact better everything. There should also be better roads by the amount of taxes the motorists are paying.

Is the death rate increasing? Or is it a natural result of a commercial condition that is impossible to entirely eliminate. The writer claims it is the latter.

Statistics show the death rate per car to be decreasing. The Literary Digest of Jan. 3 gives us some details. In 1917 there were 5,104,321 cars registered in the United States. The number of automobile fatalities per 100,000 cars then was 190. In 1923 there were 15,092,177 registered cars and the number of deaths per 100,000 cars dropped to 106. In 1915 the death rate per 10,000 cars was 24.0. In 1923 the death rate per 10,000 cars was 10.3. Materially less than one-half the rate of 1915.

Let us consider these figures. In 1923 there were approximately five times as many automobiles as in 1917. Still the death rate per car decreased. Just suppose there were five times as many railroad trains running today. Also that like roads there were many more railroad tracks being built. Surely there would be a material increase in the number of accidents. But would people blame the railroads?

With the steadily increasing popularity of the motor car we can expect an increased number of accidents, but let us present our side to the public in defense of all the industry is doing to prevent such a condition. Let us solicit their aid in rightfully placing the blame.

G. H. F.

## Dealer Enterprise in Africa

Chicago, Ill.

To the Editor of MOTOR AGE:

Let us tell you of a highly interesting example of foreign trade development. Perhaps there can be found here a suggestion to American manufacturers on the unusual possibilities of trade with distant countries.

It is a story of Umtata, a city far, far away in the southernmost end of South Africa—Timbuland, Cape Colony, to be more exact. Perhaps you will not find this city on your map, but even for the geographer's failure to place it, it plays an important role to a district of some thirty or forty thousand black or brown natives. Until recently little was known of the country, except that it was a part of the great, savage, unexplored interior. Now, there are motor cars in Timbuland—American motor cars—that are slowly transforming the country from a wilderness to a place of civilization. And Umtata, an only city there, might well be compared with our own frontier towns—that were—which stood guard over man's acquisitions and catered to prime wants.

Motor cars in Timbuland are a prime necessity, for there are no railroads and all trade and communication with the world outside must be carried on over a 200 mile stretch of steep hills to the coast. Although the roads over these hills are like some of the trails over the Rockies, there is to be found this year a quite definite hurry and noise and smell of motor cars. And American motors lead!

There's the reason for automotive trade; and the reason for the replacement parts trade that the Burgess-Norton Mfg. Company have gained. The several dealers in Umtata are so much alive to the motor industry that they are advertising B-N piston pins quite extensively. We recently received a request from the Umtata Garage for lantern slides so that these B-N pins could be advertised to the car owners.

Lantern slides in Umtata! Don't you think that this might be an index to the great amount of trade that might be had if worked properly and with patience? The Burgess-Norton Company have found it mighty profitable for the past three or four years.

Very truly yours,

I. C. BILOW.

## Three Typical Operations in Durant and Star Maintenance Plan

Twenty operations of which these are typical are listed in booklet given free to all buyers of new Durant and Star cars.

500 Miles MS-1  
**Lubrication**

*Drain oil from motor and replenish*  
*Lubricate:*  
Spring bolts—front and rear  
Front axle king pins and tie rod bolts  
Brake lever oilers, rod end pins and shaft bearings  
Clutch thrust bearing

**Tighten**

Cylinder head bolts  
Motor hold down bolts to frame  
Spring clips—front and rear  
Body bolts

**Adjust**

Adjust front wheels for alignment  
Price.....\$2.85

1000 Miles MS-2  
**Lubrication**

*Drain oil from motor and replenish*  
*Lubricate:*  
Spring bolts—front and rear  
Steering gear  
Front axle king pins and tie rod bolts  
Brake lever oilers, rod end pins and shaft bearings  
Universal joints  
Fan  
Clutch thrust bearings  
Distributor drive shaft

**Tighten**

Cylinder head bolts  
Motor hold down bolts to frame  
Spring clips—front and rear  
Spring shackle bolts—front and rear  
Universal joint flange nuts  
Ammeter, lighting and ignition switch, starting switch, starting motor, distributor, coil, and generator connections and terminals.  
Radiator hose clamps  
Water pump packing nuts

**Adjust**

Valves (clearance: Star, ".0075"; Durant, ".004", with hot motor)  
Price.....\$3.90

The dealer checks off the operations as performed so that he should always have a good idea of the car's condition.

2500 Miles MS-5  
**Lubrication**

*Drain oil from motor and replenish*  
*Drain oil from transmission and replenish*  
*Drain oil from rear axle and replenish*  
*Lubricate:*  
Spring bolts—front and rear  
Front axle, king pins and tie rod bolts  
Rear axle outer bearings  
Brake lever oilers, rod end pins and shaft bearings  
Universal joints  
Clutch thrust bearing  
Steering connecting rod

**Tighten**

Hose connections  
Water pump packing nut  
Price.....\$4.45

## Durant and Star Maintenance Plan

*An Intelligent Method of Enabling the Dealer to Sell Three Items of Preventive Service at Standard Prices*

By PAUL DUMAS

IT is common knowledge that the average car owner seldom realizes the importance of having certain repairs made to his car at regular intervals. Custom and conditions of the past have led him to assume that he should go to the maintenance station only when something is wrong.

The maintenance dealer knows that regular lubrication, tightening and adjusting is regularly needed and that if done regularly the owner will get the maximum of satisfactory miles from his car.

It is also known that this work should be paid for by the owner—that it is purely maintenance work—and that if it is explained to him in the proper way he will be willing to pay for it.

The Durant Maintenance Service plan for Star and Durant cars is conceived on the basis that Preventive Maintenance as exemplified in tightening, lubrication and adjustment, will go a far way in eliminating owner dissatisfaction. As compiled it contains the complete layout for its practical installation as a part of the regular Flat Rate maintenance merchandising activities of the official Star and Durant dealer.

### Forms Comprising the System

The layout as supplied to dealers consists of five pieces of printed matter, three of which are booklets.

The maintenance service plan operations are described and priced in a pocket-size 23-page booklet which is sent the owner or given to him at the time the new car is purchased. The opera-

tions described are laid out in groups under the three headings of lubrication, tightening and adjust. They are numbered beginning with No. MS-1 which contains the work that is deemed necessary after the car has completed its first 500 miles. The next operation is MS-2 incorporating the work scheduled for the second 500 miles or first 1,000 miles of service.

The operation group next listed is No. MS-3 which is to be applied after the car has accumulated a mileage of 1,500. The remaining operations contained in the booklet are numbered consecutively and cover work to be executed at each 500 miles of added mileage. The operations listed and prices quoted are based on the assumption that they are to be applied at regular intervals of 500 miles each. Sample pages from the owner's booklet give an idea of the comprehensiveness of the plan. The arrangement is such that the lower priced groups alternate at 500 mile intervals with the higher priced groups until the 2,500 mile mark has been reached, at which point is operation MS-5 selling for \$4.45. The same order of alternate high and low priced operations holds until the mileage is 5,000 when operation No. MS-10 is applied, selling for \$5.55. The more comprehensive operations covering the three items of preventive maintenance are therefore arranged in the compilation so as to occur every 2,500 miles.

Used in conjunction with the small booklet sent the owner are a series of Personal Service letters illustrated with cartoons. These letters cover the sea-

<b>MAINTENANCE SERVICE</b>		
<b>500 MILES—MS-1</b>		
Owner's Name _____		
License No. _____		
R.O. No. _____		
<b>Perform the following operations. Mechanic to check O.K. when completed.</b>		
<b>LUBRICATION</b> <i>Drain oil from motor and replenish</i> <i>Lubricate:</i> Spring bolts—front and rear Front and axle king pins and tie rod bolts Brake lever oilers, rod end pins and shaft bearings Clutch thrust bearing		
<b>TIGHTEN</b> <i>Cylinder head bolts</i> <i>Motor hold down bolts to frame</i> <i>Spring clips—front and rear</i> <i>Body bolts</i>		
<b>ADJUST</b> <i>Adjust front wheels for alignment</i>		
<b>WORK COMPLETED:</b> Date _____ Signed _____ Mechanic _____ <small>DS-132</small>		

Fig. 4.—The tag affixed to the steering wheel functions as an authority for repairs and as a working guide for the mechanic assigned to the job

sonal feature of the business, call attention to the extravagance of neglect and suggest contract priced preventive maintenance operations of appropriate arrangement. The letters capitalize the fact that it costs much less to prevent trouble than to fix it after it has happened.

When the car first comes to the dealer maintenance establishment for preventive maintenance the following forms and procedure are brought into play. The maintenance salesman or equivalent greets the owner, and observes the speedometer season mileage reading. Theoretically the dial should show approximately 500 miles total mileage. The owners' name on a special maintenance service repair tag, which is a duplicate of the owner's booklet except that price is omitted, is authorization to execute the work listed on the tag at the price specified in the booklet for corresponding operation.

#### Attached to Steering Wheel

This special tag is attached to the steering wheel and remains there until the work is completed. Upon completion the mechanic or foreman inspects the job and checks it O. K. on the tag.

The dealer is provided with a small booklet of gummed number stickers perforated so as to be easily detachable. The mechanic or shop floor salesman tears from this booklet a number that is 500 miles greater than the last three figures on seasonal mileage dial of the speedometer. In the case of the first call with a speedometer season dial reading of 500 the dealer affixes a sticker marked "000" on the dial glass directly over the three last figures registered. The car then should come in for the next operation when the reading is 1,000 miles, when the old sticker is removed and a new one of suitable numerical value applied.

A small follow up card is used in conjunction with the maintenance service

**Fig. 2—The follow up card used in conjunction with the Maintenance Service plan is filed in a numerical file and thus acts as a daily reminder and planning sheet for the dealer**

plan. It comes into play after each operation is performed. On it the dealer enters the date on which last operation was executed, after which it is placed in a numerical file under date next operation is due. By regularly examining the numerical file the dealer knows just what cars are due each day for the special service. Should the owner fail to show up on the approximate date repre-

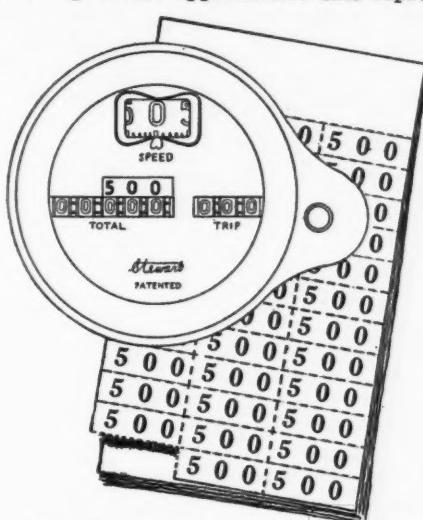
Form D S 125				
Name _____				
Address _____				
Serial No.		License No.		
MS 1	MS 2	MS 3	MS 4	MS 5
MS 6	MS 7	MS 8	MS 9	MS 10
MS 11	MS 12	MS 13	MS 14	MS 15
MS 16	MS 17	MS 18	MS 19	MS 20

card filing idea, it is, of course, necessary to find out the weekly mileage average of the individual car. Procrastination on the part of the owner is alleviated by sending one of the appropriate Personal Service letters.

To secure a good idea of the resale value of a car after a period of service the dealer is supplied with a form known as the "Owner's Record Card," which is similar to the general owner record card used by the majority of dealers. This particular card is, however, provided with numbers from 1 to 30 across its face on top to be used for checking the date under which the "follow up" card is filed in the numerical file. Reference to the follow up card in the case of a probable trade-in gives the used car evaluator a tangible idea of the care the car has received during its original ownership.

#### Objectives of the System

All of the forms necessary for the application of the Maintenance Service plan can be reproduced by the average job printer at a small cost. They can also be secured at a nominal cost from the manufacturer's wholesale offices. The Owner Booklet which is the most comprehensive piece of printing in the layout is supplied free by the factory for distribution to all new car purchasers.



**Figs. 5 & 6—The gummed numeral label on the dial of the car speedometer tells the owner when he should make his next call for the stitch in time**

sented by the time required to cover the 500 miles the dealer phones or writes him and then refiles the card under another date. To get the most out of this

*He thought the brakes were all right*

He was mistaken. One took hold quicker than the other a bad skid  
a damaged car

This might have been you.

Slippery, icy streets require perfect brake adjustment

Rusted operating levers, dirty brake bands, and un-equalized brakes impair the efficiency of your brakes

Don't wait - have them gone over NOW - today

You cannot afford to risk an accident due to the failure of your brakes to function properly. The repair bill, possibly personal injury to yourself or to others, are considerations that outweigh many times the small cost of making your brakes safe

This is what you should have done

CLEAN ALL BRAKE OPERATING PARTS.  
LUBRICATE ALL BRAKE ROD ENDS.  
EQUALIZE AND ADJUST SERVICE BRAKES.  
EQUALIZE AND ADJUST PARKING BRAKES.

We will perform these operations and furnish all material required for \$3.80

A stitch in time saves nine. Do it now, so that later you may not have cause for regretting your inaction

Very truly yours

*Rattles and Squeaks*

are not only annoying, but impair the operating efficiency of your car. If neglected, they lead to excessive repair bills

The following work should be done

TIGHTEN MOTOR BOLTS  
ADJUST AND LUBRICATE SPRING SHACKLE BOLTS  
TIGHTEN ALL SPRING CLIPS  
TIGHTEN FENDERS AND SPLASH APRONS  
TIGHTEN FLOOR AND RUNNING BOARDS  
TIGHTEN BODY BOLTS  
TIGHTEN BUMPERS  
TIGHTEN RADIATOR  
TAKE RATTLES OUT OF DOORS  
PAINT SPRINGS WITH OIL

We will do the above, including labor and material, at a total cost to you of only \$4.85

We sincerely believe if you will take advantage of the service offerings which we make from time to time, you will better enjoy the honest qualities built into your car

Bring your car to our Service Station and let us take care of these items for you

Yours very truly,

**Fig. 3—When set off by an appropriate illustration letters such as the above are effective business getters**

**Fig. 4—Elimination of body and chassis noises, if it can be accomplished for a reasonable price, is a repair job that owners are eager to buy**

# New Rex Top for Open Cars Closely Resembles Lines of Sedan

**S**OMETHING new in a permanent top for touring cars and roadsters, which, with an enclosure, closely follows the lines of a sedan, yet retains all the freedom and advantages of the touring car, was introduced recently by the Rex Mfg. Co., Connersville, Ind. The new top is lighter in weight yet far stronger than the ordinary folding canopy top and the enclosures are weather-proof and have full vision.

Two of the most radical changes are the elimination of the convex curve at the back formed on the canopy tops by the rear bow, and a new method of holding up and bracing the top at the rear. The triangular, or gypsy curtains at the rear sides also have been eliminated except when specially specified.

### Iron Braces Detachable

Two detachable iron braces run from the tonneau rim to the steel band which forms the rigid sides of the top. These braces hold the major weight of the top, which is further strengthened at the rear by two smaller metal braces. These latter make possible the straight back with right angle turn at the roof which characterizes closed cars.

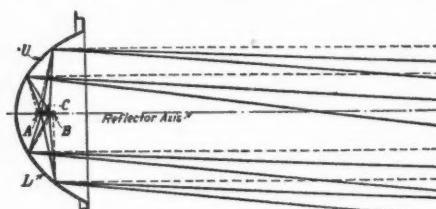
Either four or five panels, according to the size of the car, are used on each side to fully enclose it. All have large glass windows and the edges are covered with the same material as is used for the top.

A specially designed windshield, the sides of which come straight down to the top of the cowl is used. This can be had either in one or two piece glass. The new windshield permits a weather-proof fastening of the front enclosures.

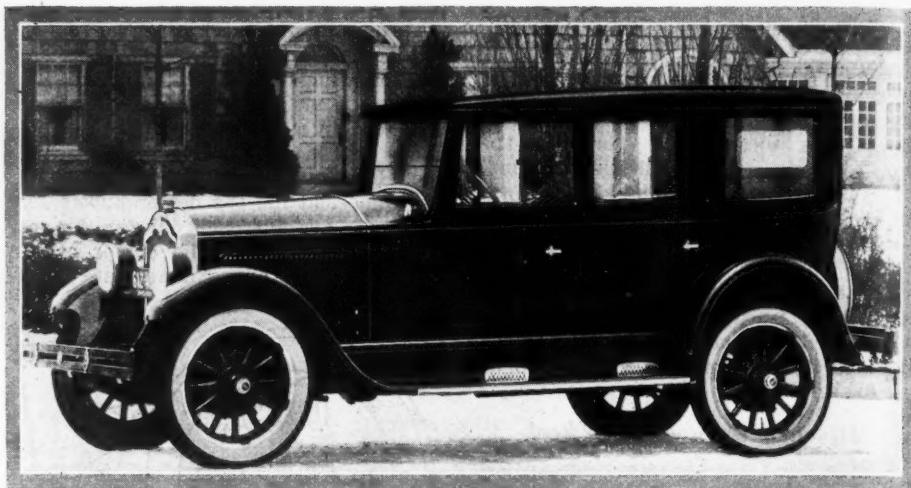
The top has a slight graceful curve from rear to front and the usual overhang in front of the windshield has been eliminated. It is supported against sagging by five or six steel bows, according to the length of the car.

### GUIDE RAY LAMP

In order to make glareless driving light a reality, the Guide Motor Lamp Co., Cleveland, Ohio, has developed a two focal point reflector working in conjunction with a specially designed lens. It is called the Guide Ray and the makers claim these headlamps are not only



Distribution of light from a reflector having two focal points



This shows the new Rex permanent top mounted on a Buick open car. Note the resemblance to a sedan body

glareless, but provide a powerful blanket of light at a distance of 200 ft. from the car. The lens merely spreads the light in predetermined amounts, as all glare annoyance has been taken care of in a special design of reflector. The illustration shows the distribution of light from a reflector having two focal points. A and B are the respective focal points of the upper and lower halves, U and L, of the reflector and the lamp filament C is located between them. This results in the rays being reflected either parallel to the reflector axis or in a downward direction.

### OPEX NEW LACQUER FINISH

It is said that OpeX has the necessary properties to give a higher solid content, which is not only due to the quality of cotton and solvent, but because it holds a pigment that produces a heavier coating. This pyroxylin finish is unaffected by acids, alcohol, gasoline, naphtha, etc. It is not stained by alkalis.

Although it is just being put on the market, practically 20 years have been spent in its development. Chemists first started work on such a product in 1905. Actual sales were made as early as 1914, but it has been since then, due to the summation of events and discoveries, that the greatest effort, research and development work has been put into the product. The present OpeX is the result.

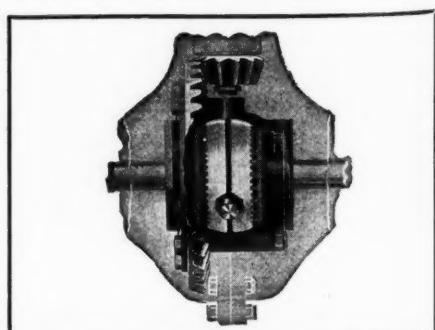
OpeX lends itself especially to large production work. The original time of finishing a car was approximately two weeks. The use of OpeX pyroxylin enamels has cut down this to one week. The new finish is made by Sherwin-Williams, paint makers of very long standing, and who naturally have studied the question of motor car finishes from all angles.

### Lewis Self-Locking Differential

The Lewis self-locking differential for Fords consists of a driver in the shape of a spider and two clutch gears. The clutch gears have double cams on their inner sides which work in conjunction with the spider. They have teeth on their outer sides which mesh into all twenty-four teeth of each gear on the inner ends of the Ford axle shafts. When driving the teeth are locked giving the effect of a solid axle.

The outside wheel when turning a corner exerts enough pressure on the axle gear to cause the spider to drop away from the cams and into a neutral position the clutch is forced towards the center by the axle gear allowing the teeth to slip by and engage again in the teeth of the clutch. This is repeated a number of times while the car is turning a corner.

The retail price of the Lewis self-locking differential for Fords is \$20. It is made by Lewis Automotive Products, 29 South La Salle St., Chicago.



Sectional view of the Lewis self-locking differential for Fords

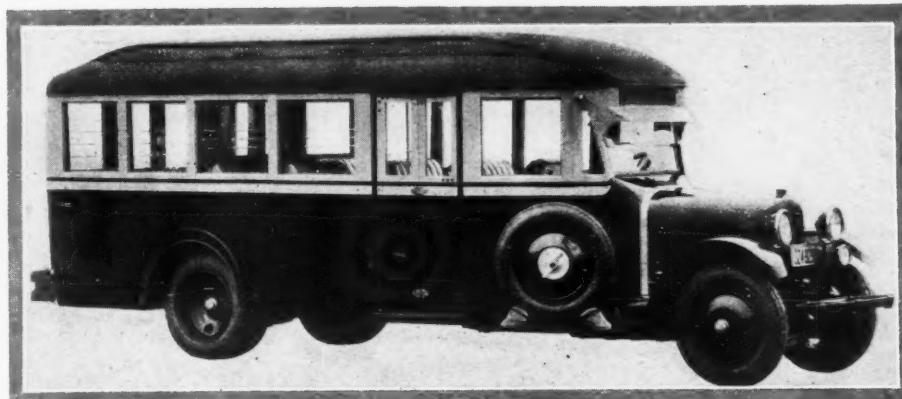
# New Bus Body Has Features of Both Inter-City and Pay-Enter Types

INCORPORATING the advantages of the city pay-enter type of body combined with that of the inter-city motor coach, the new body recently brought out by the Auto Body Co., Lansing, Mich., is said to afford a greater range of flexibility tending towards operating economy. It allows the operator to shift this unit immediately from city to inter-city work. It is built to withstand hard usage over highways and to provide for pick up and emergency loads.

## Cushions Genuine Leather

It has ample head room for standing passengers, made possible by the new monitor type roof. The cushions are genuine leather with tilted backs. A comfortable smoking compartment of ample proportions is optional. The operator does not have to leave his seat either to collect fares or handle baggage. Its safety features are in its two emergency doors, one located opposite the entrance door and one in the center rear. Fixtures and appointments are strikingly pleasing yet practical. It has a dual lighting system, a signal device at the command of each passenger and standard window regulators. It has a well devised heating and ventilating system. The interior woodwork has a satin walnut finish.

This model seating from 19 to 27 passengers can be furnished for all leading chassis.



*Center aisle type of motor coach body which recently has been brought out by The Auto Body Co., Lansing, Mich.*

## Your Income Tax

A debt discovered to be worthless and charged off the books of the taxpayer for the year 1924 may be deducted from the gross income in computing net income for that year. The return must show evidence of the manner in which the worthlessness of the debt was discovered and that ordinary and legal means for its collection have been or would be unavailing.

Bad debts may be deducted in whole or in part. When deducted, the taxpayer must be able to show with a reasonable degree of certainty the amount uncollect-

ible. Partial deductions are allowed with respect to specific debts only.

A valid debt proved to be worthless may not always be a proper deduction. For example, unpaid amounts representing wages, rentals, or similar items are not allowed as deductions unless included as gross income in the creditor's return for the year in which the deduction is sought or in a previous year. The fact that expected income was not received does not reduce the amount of taxable income of the creditor.

Unpaid loans made to needy relatives or friends with little or no expectation that they would be repaid are not deductible, but are regarded as gifts.

# 25 Years Ago In the Automobile Industry As Recorded In MOTOR AGE

*(From Motor Age of March 8, 1900)*

they hope will give a fillip to the trade in that country, which, strangely, is none too good.

## Prospects of Motor Show

NEW YORK, March 2.—Albert C. Bostwick, chairman of the committee in charge of the proposed motor-vehicle exhibition next autumn, to be promoted by the Automobile Club of America at Madison Square Garden, was seen today by a Motor AGE man and gave further and more definite particulars of the plans that were contained in the first announcement in these columns. \* \* \*

"Papers and plans are being drawn now," says he, "and it is probable that the show will be held at Madison Square Garden the first week in next November. While it will be a trade show, it will present many of the moving features of the outdoor show held last spring by the Automobile Club of Great Britain. The center space, in which the wheels will be shown, will be encircled by a track,

on which automobiles will be shown in motion and contests in starting, etc., will be conducted. There will also be hill climbing contests on an inclined plane, which proved so popular at the English show.

## Work for Good Roads

NEW YORK, March 3.—A. R. Shattuck, chairman of the good roads committee of the Automobile Club of America, had a conference this afternoon at league headquarters with the executive committee of the New York division of the League of American Wheelmen in reference to joint action in the matter of urging the passage of the bill appropriating \$1,000,000 for the improvement of the highways of this state under the provisions of the Higbie-Armstrong act. Mr. Shattuck in his representative capacity was one of those who appeared before the ways and means committee of the assembly to urge the passage of this appropriation.

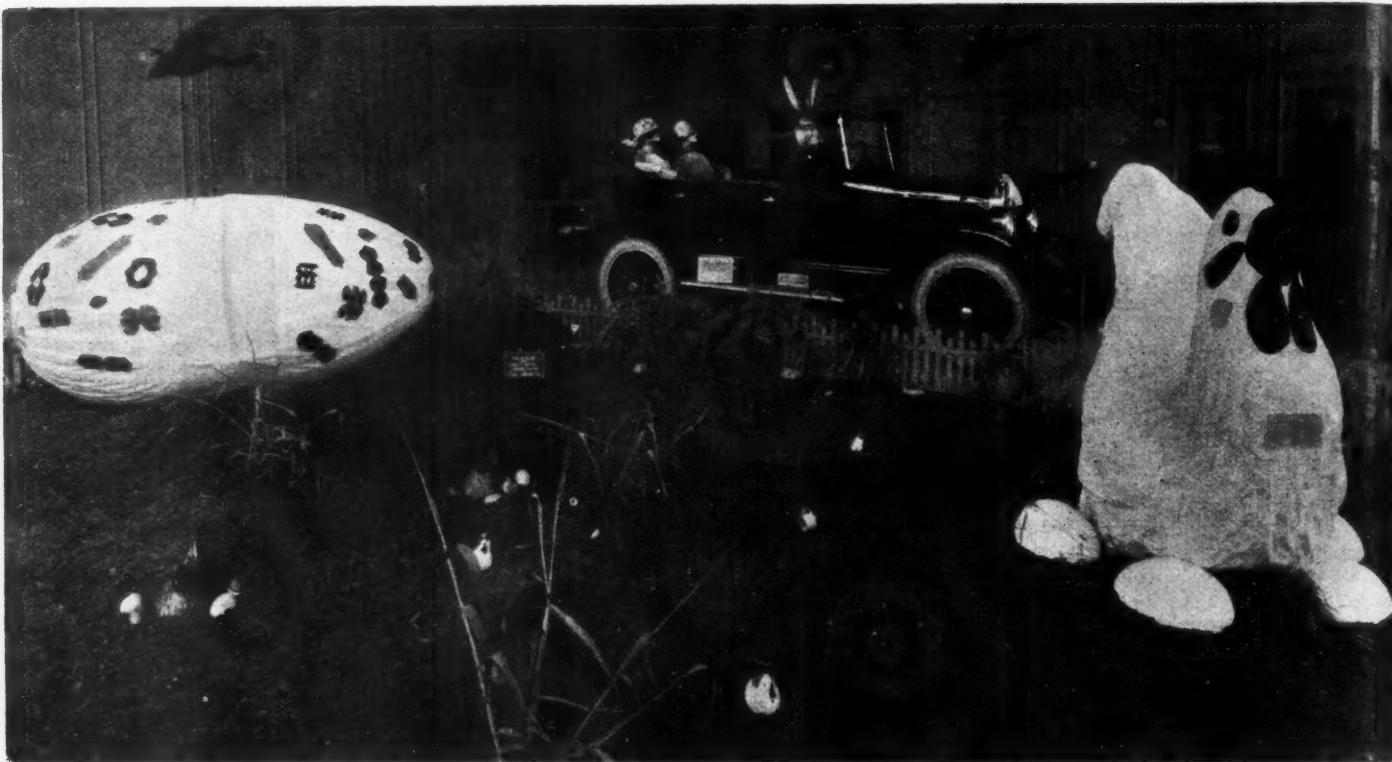
## Automobiles Increasing

Everywhere in the streets one sees evidence of the constant increase in the number of automobiles—they are doubling, quadrupling, becoming the fad and rags of the hour, says the New York Herald. They have come to stay, too, and if any one were to ask for evidence of the great popular growth of the horseless carriage it is to be found easily. Not only is ocular demonstration at hand, but the great factories of the country are being piled with orders that cannot be filled readily, owing to contracts already placed. A dispatch from Amesbury, Mass., says that a representative of one company in New York alone has placed there orders for from 20 to 30 automobiles per day for the coming six months.

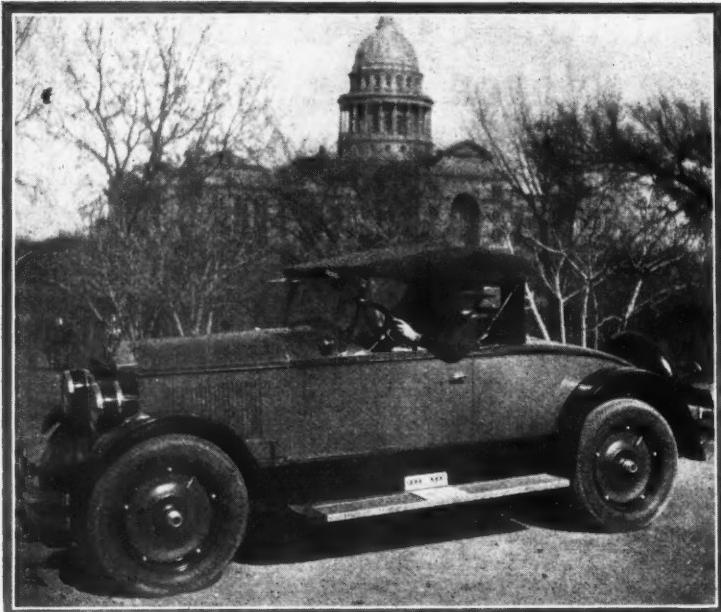
## Royalty Orders Car

The Prince of Wales has placed an order for an automobile, a fact which gives great satisfaction to the manufacturers in Great Britain and on which

# MOTOR AGE'S PICTURE PAGES



**A NOVEL EASTER DISPLAY.** It was designed by E. A. O'Neill, president of the O'Neill Motors Co., Pasadena, Cal. The feature is the apparent motion of the car. The wheels revolve and the veils of the women appear agitated by the rapidly moving air. The car was blocked up clear of the floor and the drive shaft dropped and attached to an electric motor. This actuates the rear wheels and the front wheels revolve in unison by the use of small invisible belts running on rims attached to the inside of the wheels. An electric fan placed on the floor board of the tonneau provides the wind. Easter this year is April 12

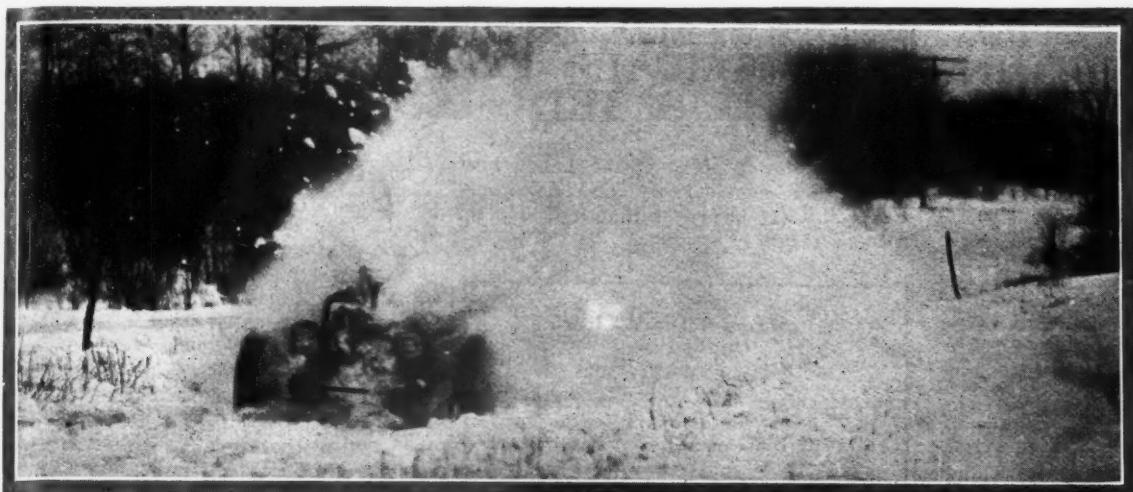


**AT THE HELM IN TEXAS.** "Ma" Ferguson, recently elected governor of the Lone Star State, is shown here in a De Luxe Moon roadster, the state capitol at Austin in the background. When she puts her official foot down hard on the accelerator she may learn that it is easier to break the laws of her state than to make them



**ALL THE COMFORTS OF HOME.** An attractive corner in the sales room of R. G. Adams, Maxwell and Chandler dealer at Fullerton, Cal. Note the awning stretched over a flower box of drooping ferns, giving an outdoor effect to the office. A small but well-displayed stock of accessories is shown at the right.

# OF AUTOMOTIVE INTEREST



**SOMETHING STIRRING HERE.** A Studebaker Small Six, 1924, going through snow in the foothills of the Canadian Rockies. The owner and driver is George Webber of Calgary, Alta., and the car was used in filming a moving picture



**NEW AUTOMOTIVE CHIEF.** Edward VerLinden, who has just taken up his duties as president, general manager and director of the Peerless Motor Car Co.



**FINISHING IN THE MONEY.** In a recent industrial parade at Porterville, Cal., this oil drum on wheels won a prize



**BLENDING LINES OF NATURE AND THE CAR.** The subtle curves of the modern enclosed body harmonize well with nature's own. This is a Nash Special Six Sedan

# The READERS' CLEARING HOUSE

*Questions and Answers on Dealers' Problems*

## BUILDING - ELECTRICAL - FLAT RATES SHOP - LEGAL - PAINT & TRIM - ACCOUNTING

### A Questionable Anti-freeze

Q.—If possible will you kindly inform us as to the action of a 20 per cent solution of calcium chloride and water on solder and brass. It seems to be a well known fact that the above mentioned solution does not freeze until the temperature of about  $1\frac{1}{2}$  degrees below zero is reached and does not boil until 220 degrees Fahrenheit is reached. It is also known that the solution has practically no action on iron or brass and several of us have wondered if you could not give us information to show why it is that such a solution is not used for radiators and motor cars during the winter season. We have been unable to learn its effect on rubber connections or on the soldered joints of radiators.—C. D. Corwin, Corona Building & Improvement Co., Inc., Groton, N. Y.

The chief difficulty with the use of calcium chloride is that the commercial variety is used which contains a considerable percentage of free acid which reacts on the metal parts of the cooling system, causing corrosion and affecting the soldered joints. It is accordingly desirable if calcium chloride is to be used that chemically pure stuff be obtained. If it is impossible to obtain calcium chloride which is chemically pure it is recommended that it be neutralized by using either ammonia or soda. This alkali should be added to a calcium chloride solution until blue litmus paper no longer turns pink when moistened with the solution. From tables which we have available it is recommended that two pounds of calcium chloride be dissolved in each gallon of water to give a freezing point of 18 degrees above zero, three pounds for a freezing point of 1.5 degrees above zero, 4 pounds for a freezing point of 17 degrees below zero, and five pounds for a freezing point of 39 degrees below zero. It is quite probable that the trouble with calcium chloride is using it unneutralized.

### TEST FOR PISTON SLAP

Q. I saw your Bill Fixit in Motor Age and was wondering if you could help me out. We have been working on a 22-B Durant which has a peculiar chack, chack when she pulls but when she runs on level road it is perfectly quiet. We have put in new timing gears, new piston rings and pins, but it still does the same. The car has done 6,000 miles. We also tightened the bearings. Is this chack due to short connecting rods and is it more or less natural to the Durant four motor?—New Jersey Reader.

We believe that this engine has a slight piston slap. To test for is note whether the engine noise is loudest with engine cold or hot. Pour in about half a cup of 600W cylinder oil into the suspected cylinder or if you cannot trace the knock to any certain cylinder pour a half cup full into each cylinder and allow it to stand for about a minute and then operate the

engine under a pull. If the knock has diminished considerably or has gone away entirely it proves that it is due to a loose piston.

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### Condition Caused By Wear

Q.—Why is the top of the Ford valve tappet recessed?

The condition you describe is doubtless due to wear which takes place more rapidly if the clearance between the tappet and the valve stem is insufficient. When a very small clearance is used and the valve stem expands due to heat the explosion pressure carried on the head of the valve is transmitted through the stem to the tappets. If you will look at valve tappets at the stock room of any authorized Ford service station you will doubtless find that they are flat on top.

Q.—Give technical reason for the king pin on Buick front axle sloping outward at the bottom of the pin.—C. E. Harclerode, 162 W. See street, Steelton, Pa.

This construction is not confined to Buick cars and is quite desirable on cars using front wheel brakes. It permits an extension of the king pin to strike the road at approximately the center of tire contact. This means that as the front brakes are applied and a retarding action experienced at the front wheels there is no appreciable tendency to have the wheels toeing either outward or inward. If the front wheels should be vertical and the king pin also vertical any retarding action would tend to turn the wheels outward so that the right wheel would tend to turn to the right and the left wheel would tend to turn to the left. Then if the braking action on the two wheels should not be exactly the same there would be a tendency for the car to turn one way or the other in spite of the efforts of the driver. The slanted king pin overcomes this condition and makes more easy steering.

### A READER'S SUGGESTION

Editor MOTOR AGE:  
Chicago, Illinois:

In Reader's Clearing columns of Jan. 15, a subscriber gives his method of taking end play out of Ford crankshaft. I want to give him my method that I have used successfully for several years. If the crankshaft is to be moved so as to throw magnets closer to the coils, I remove the bearing cap next to flywheel, file the bolt holes out of round in direction of flywheel, then replace bearing cap, put a shim in by side of bolt equal to amount filed out, put on bolt nuts and tighten. I have had instances where it was necessary to move the crankshaft in the other direction to prevent magnets from striking coils. In that case I just reverse the process, filing bearing cap holes on the other side, moving the bearing cap toward the flywheel the necessary distance to get the required clearance.

JOHN A. WAKEFIELD.

Cowden, Ill.

# Planning Your New Building

By TOM WILDER

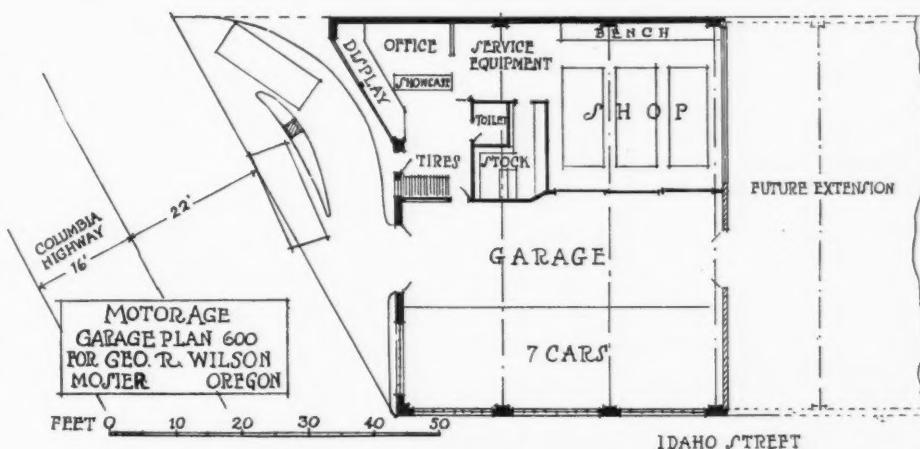


## Building to Serve the Tourists on Columbia Highway

**Q.**—I am sending you a pencil sketch of a garage I plan on building next spring and would like to have your assistance in planning it. The lot is on the Columbia Highway and we expect to get most of our trade in the summer from tourists and local repairing in the winter. Travel on Idaho street is light at present.

The building will be of concrete, one story, about 40 ft. by 60 ft. with a shop about 24 ft. by 24 ft. in the back. As you will note the corners of the lot are not square and I am having difficulty in planning a building that will fit the lot. I do not plan on selling cars. At the beginning will employ one mechanic in shop steadily with helper part time. I will carry about \$1,000 in stock. I would like to have a floor plan showing most advantageous layout of office and stock, wash rack and rest room and toilet. I especially would like a design of the front showing size and location of doors and size and location of windows. I am anxious that the front present an attractive and pleasing appearance.—Geo. R. Wilson, Mosier, Oregon.

We have not tried to follow your layout in making ours since the 60-degree angles shown in your sketch are very hard to utilize in garage buildings. Motor cars are always rectangular and need rectangular spaces for storage and consequently if you build a garage with angles other than 90 degrees you are always bound to have considerable waste space. By squaring the building up and throwing all the waste space into the front this can be utilized very nicely for a drive-in filling station if you desire.



Angles other than 90-degree angles always give waste spaces in the garage

We note on your sketch, however, that you have a gasoline pump at the other side of the Columbia Highway and perhaps you do not wish one on this side. By having a pump on either side you could catch traffic in both directions and perhaps this would be the best arrangement. At any rate, a pump would attract customers to your accessory store and service shop. Another reason for building this way is so that it will be easier to add more space in the future by simply extending the rear.

The layout of shop, office and salesroom is ideal for the reason that you can handle it all yourself when necessary.

Even working at the bench in the shop a view is had of the pump in front and of the accessory store while from the office or service equipment sections a view can be had of the whole building practically.

The front of the building being out of line with the Columbia Highway it will be an advantage rather than a disadvantage in that it can be seen further down the street. We assume that you are in the colder section of Oregon and if this is the case the arrangement will be advantageous in that it will be very easy to heat as all the working parts of the building are grouped together and closed.

## Legal Questions Answered—

### A CASE OF CONFLICTING RIGHTS

**Q.**—We will appreciate any advice that you can give us concerning a truck that we have in our possession holding for repair bill. This truck was brought to this (Stoddard) county, Missouri, from another county (Mississippi) in which the owner formerly resided, and who had, before moving, given a mortgage on said truck but has never paid it off. The mortgage has not been recorded in this (Stoddard) county.

What we want to know is: Can we sue owner, and after getting judgment, sell the truck and apply sale price on our bill? What can the man holding mortgage do, if anything? We believe that the truck will not sell for enough to pay either of us in full.—Missouri Reader.

In your state the statute says that the garagekeeper's lien shall not take precedence over or be superior to any prior lien on the repaired article, created by any chattel mortgage on the same, duly filed and recorded. Therefore, should you sue and take judgment, said judgment would follow the chattel mortgage lien. And should you proceed and sue

to judgment the mortgage holder could either intervene in the suit and show his superior right or he could wait and bring suit against you and recover his mortgage claim out of funds in your hands.

If you perfect your repair and storage lien by securing a written memorandum of the work and materials, storage, etc., furnished and signed by the owner you can foreclose on this lien. It has some advantages over suing for judgment, especially as it dates back further than a judgment and establishes your right to retain possession of the truck.

### Second Feature to Case

Now there is a second feature to your case. If the mortgagee has knowingly permitted the owner of the truck to take said truck from the county where the mortgage is recorded, and knows that the owner has moved into your county and established residence there, yet nevertheless has not filed or recorded his mortgage in your county, and at the time

you made repairs you did not know of the chattel mortgage, I am of the opinion that the mortgage may not now be asserted as prior to your lien for repairs. And I cite the case of Bank of Malden versus Wayne Heading Co., 198 Mo. App. 601. The statute provides that where the mortgagee permits the mortgagor (owner) to retain possession of the property he must file or record his mortgage in the county where the mortgagor resides. Now if there is no fraud in this removal to your county it would appear incumbent upon the mortgagee to also file or record his mortgage in your county if the owner has moved there.

Therefore, preserve your lien by securing the signed memorandum and proceed from this angle. If the latter assumed facts are true, you can proceed to enforce your lien and should mortgagee intervene to set up his claim, you should win out. In any event, secure a favorable settlement with the mortgage holder.



## Automotive Electrical Information

Edited by A. H. Packer

### There's Always a Reason

It may be a generator, a lamp bulb or a piece of wire. It looks all right, but fails to perform as it should. Inside something is wrong. Inspection fails, for the trouble is not visible. Instruments will tell the story. The voltmeter and ammeter, each used in its right place, are invaluable in the repair shop. The voltmeter by its high readings shows where a connection is poor in the charging circuit, finds a poor contact without the trouble of disconnecting all the connections and polishing the lamp bracket fittings. A spare ammeter is also handy. Where the regular one is questionable, the test meter is used to check with. Where an ignition circuit is suspected, it acts as a watch dog.

Sometimes a burnt condition of interrupter contacts will put high resistance in the circuit and the ammeter by the flickering of the needle will reveal this. In checking ignition timing, the ammeter can be used with a battery ignition system to show the exact instant when the interrupter points have opened. Electrical work means study, but the time is well spent for electrical work is an important part of an automotive business.

### Answers to Questions

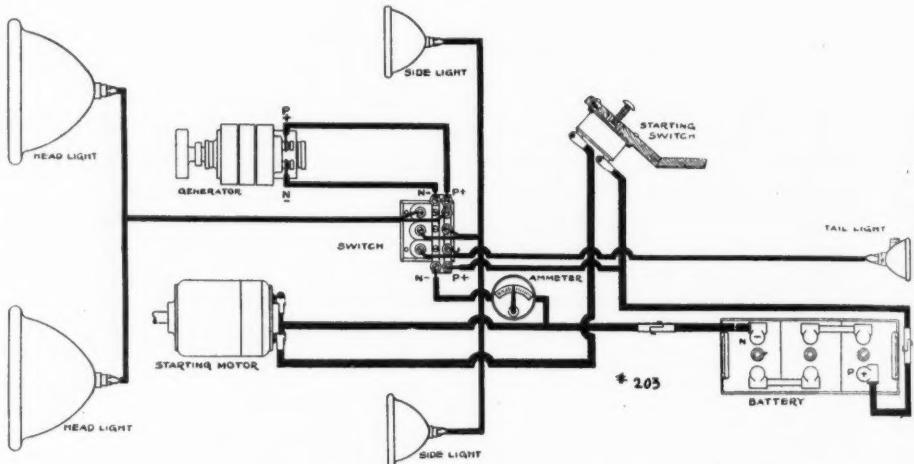
#### Lamp Bulbs Burn Out Without Apparent Reason

Q.—We have a model 1924 Ford coupe that always burns out the right headlight. It does this standing still just the same as in motion and the motor does not have to be running. What could be the trouble and where could we find it?—H. A. Spencer Garage, Barnestown, Neb.

#### An Electrical Impossibility

Our first answer would be that this is an electrical impossibility. In the first place the greatest possible voltage you could get is the battery voltage when the generator is not running. Of course when the generator is running you can get a voltage all the way from 6 up to 35 or 40 in case a connection between battery and generator is broken. There are a number of possibilities. One is that there is a poor connection somewhere in the circuit between generator and starter switch, which throws a high voltage on the headlights when the engine is running and then it is possible that the filament has been so strained that it just happens to burn out when the engine is not running.

Another possibility is that a defective bulb has been used into which air has leaked so that it will burn out on six



Partin Palmer 1914 electrical circuits

volts which you get from the battery. If you have a voltmeter or can secure one it might pay you to read the battery voltage and also the voltage at the lamps but we doubt whether you would find anything abnormal. The appearance of the bulb which has burned out will tell you something. If it is coated with a white, milky film it shows that air has leaked in and caused the filament to burn up. On the other hand if the inside of the bulb is covered with a black film it probably indicates excessive voltage. You might try putting the bulb which has been satisfactory in the left lamp into the right lamp to see how it works there.

Another possibility is that the lamp bulbs do not really burn out but that they do not light up due to a poor connection between the lamp socket and the frame of the lamp so that the lamp is not grounded. If this should occur in the right bulb for example, it would still permit the current to go through the right filament to the shell, then from the shell of the bulb through the small filament and across to the small filament of the left head lamp and through it to the shell of the left head lamp and then to ground. In this way we would have three filaments in series and the resulting current would be so small that you would probably not notice it, even in lighting up the small filament of the right bulb. This is of course just a guess but as your original question treats with something that is extremely unlikely it might pay you to work the right socket around in the lamp and see if you can get an improved contact which causes the bulb to light up. Of course you can easily test one of these bulbs in another socket or by test points connected to a 6-volt battery.

#### Reversing Bosch Magneto

Q.—Please tell me if a counter-clockwise German Bosch D. R. 4 high tension magneto No. 618833 can be changed to a clockwise magneto?

This can be done by putting on a dif-

ferent interrupter and by retiming the distributor. It is also possible to do this by using the regular interrupter although the key will not be in the right position and it will be necessary to depend on the interrupter screw to hold it in the proper position with respect to the armature. This matter of magneto reversibility was thoroughly covered on page 21 of the August 30, 1923, issue of Motor AGE and we are sending you this page by separate letter.

Q.—Does a Ford generator turn at the same speed as the crankshaft?

No, it turns 1½ engine speed, due to the fact that there are 16 teeth on the generator gear and 24 teeth on the crank-shaft gear.

Q.—What sort of a drive connection would you advise using on a counter-clockwise magneto on a Ford.—C. G. Hackbarth, Fitzimmons General Hospital, Denver, Colo.

The large magneto corporations make driving fixtures for using magnetos on Ford cars, and we would suggest your getting in touch with any of the well known concerns. The Ford generator turns clockwise and it is our impression that brackets designed for magneto mounting also provide for clockwise magneto rotation. However, you can get this information from the concern from whom you get the magneto mounting bracket.

#### WIRING DIAGRAM OF AUTOLITE STARTER AND LIGHTING SYSTEM

Q.—Would it be possible for you to obtain a wiring diagram for a Partin-Palmer car of about 1914. I have tried to get a wiring chart locally, but I could not get same. This car has a Mason motor, bore and stroke of 3½ by 6, using Autolite starter and generator. Simms switch and magneto.—H. R. Wolf Garage, 2746 E. 55th street, Cleveland, Ohio.

Although our master wiring diagram manuals do not list the 1914 Partin-Palmer, we are sending you the standard wiring diagram used on the 1914 model of the Autolite starter and lighting system. The diagram is illustrated at Fig. 203 at top of page.

# Trouble With Bill Fixit



## What Motor Age Medicine Did to a Ford Magneto

Q.—Your letter enclosing instructions for the procedure of remagnetizing the magnets on a Ford flywheel without removing the motor is before me and I am replying as to results. I followed your instructions very carefully and I think very accurately. I went to a friend who has a battery service station and he gave me special attention. I used the large-size wire, about  $\frac{1}{8}$  in. in diameter as directed and he connected up four well-charged storage batteries of 6 volts each. I used the compass and checked the directions and was careful each time to get the right position on the flywheel and I counted 20 contacts for each of the four positions of the flywheel.

I noticed that at the first contact there was an audible kick in the frame as I touched the end of the wire to it, showing that there was no lack of energy there. I find one can easily count the number of ends to the brass bolts as they pass in turning the flywheel to a new position. There are 16 of these brass screws in all so that when the wheel is properly set for the first charging one can get the next position by moving the flywheel until four of these have passed and the fifth comes into the position of the first.

However, I also checked each position with the compass. You asked for a report on your instructions. Before recharging the motor would not carry one headlight without missing part of the time. With two it missed badly. It always started with difficulty. I let it stand 24 hours or so without turning the flywheel after recharging. I then tried it with the two headlights and also a spotlight. It pulled them all without letting the motor miss. I put in two new bulbs of 9 volts, each wired in series the day I recharged it. They did not burn an hour—perhaps not 10 minutes. I next tried 12-16-volt lamps with same series wiring, but first rewired the system to make sure. One of these burned out in less than 10 minutes.

### There's Always a Reason

I have not used lights since. I have not had the magneto tested but I suppose the recharging made it too strong for the magneto lighting without modification. I have driven it several hundred miles since recharging, but always in day time. I have thought at times that the magneto is not as strong as the first day, but yet what I was using as comparison (a harder start once in a long time) may not be a guide at all. I expect to install a transformer and use two 6-8-volt lights wired in multiple or in series depending on the transformer. So much for the report to you of my results. I believe I can get along from this on. And I want to thank you very much for the help rendered in sending the exact directions for recharging the magneto. Every garage authority I could consult told me no good results could be had from trying to recharge a Ford magneto without removing the motor. I expect to work out the problem, but if you can afford to take interest in me any further I would ask several questions, as follows:

Is it likely that I have already lost some of the magnetism in the magneto? If so, is it probably a large part of what I put in or a small part? The battery man seemed to think 12 or only 15 contacts would have been better than my 20 and I would have left the magneto less highly charged and better for the lights. I had been going on a self-formed conclusion that it was like a jug and that I could not more than fill it and any excess would run off like water when the jug is filled.

I am still wondering whether the Ford magnets are subject to overcharging or whether they can only be filled. And I am also wondering as to how long the good results of recharging will last—as long as when done at the factory?

I find the Ford Motor Company use a small transformer mostly on the trucks and 6-8-volt lamps wired in series. I also know there is a transformer that claims to remedy such a trouble as mine, by installing with wiring in multiple and using the 6-8-volt lamps. They also dim the lights for passing by a throw of the switch and claim one light will burn regardless of the other. Which of these would you recommend?

In closing I wish to state this: The directions you have for recharging are certainly a great help in such a case as mine. And there is many a Ford whose magneto ought to be stronger, although it is going fairly well. They should each have a dose of your medicine.—L. Felger, Pheba, Miss.

### An Apt Illustration

Comparing the magnets of the Ford magneto to a jug in which water is being poured is a fairly good illustration, for the magnets tend to become saturated so that additional charging does not have much effect. Another illustration might be that of comparing the magnet to a sponge, which when dipped in a pail of water absorbs a certain amount. However, when the sponge is taken out of the pail of water a certain amount of water runs off, although the sponge still remains wet. This also illustrates the action of the magnets for some of the magnetism is soon lost although it is but a small proportion.

Both heat and vibration will tend to weaken the magnets and this is true no matter what process is used in re-magnetizing. It is our understanding that the Ford system of lighting using the magneto as a source of current requires a transformer device of some sort to give satisfaction. This is due to the fact that the voltage of the magneto is in exact proportion to the speed at which the engine runs. For this reason if the voltage is just right when the car is traveling 15 miles per hour it would be twice as much as the lamps require when traveling at 30 miles per hour. This ratio is not exactly true when current is being delivered but is approximately true. The frequency with which the alternating current reverses increases as the speed increases and for this reason a transformer device or impedance coil will have a greater proportionate effect at high speed on account of the fact that the frequency increases with the voltage.

The regulation Ford resistance unit wound on an iron frame and used as you say on Ford trucks should by all means be used unless you use a device which accomplishes the same purpose. This unit has connections which go to the lighting switch and enable you to have only a few turns of this coil in

series with the lamps or to have a great number of these turns in series. This gives you bright lights which are fairly reliable and are protected somewhat from the varying magneto voltage and also gives you dim lights when all of the turns are used.

With the Ford unit, we understand that the conventional 9 volt lamps are used. Another suggestion if you have a spotlight is that you wire the spotlight and the two headlamps in series so that the current first goes to the spotlight, then through the right headlamp and then through the left headlamp to ground. You could use three bulbs all alike, either 9 volt or 12 volt bulbs, but we believe that with the regulation impedance coil that you will have no trouble. Should you find that none of these devices gives satisfaction and that the lights continue to burn out you could doubtless weaken the magneto somewhat by running the engine at a fair rate of speed and using a piece of wire or screwdriver to temporarily short circuit from the magneto to the frame of the engine. In doing this you are of course taking a chance that you will weaken the magneto so that it will need an additional tonic.

### AUTOMOBILE MOTOR NOT SUITED FOR 110 VOLTS

Q.—Sometime ago I noticed that a North East motor starter could be made into 110 volt motor and having gone through most all the Motor AGES on hand, cannot locate this idea in any of them. Kindly let me know which number this was in.—The Electric Store, Mayville, North Dakota.

You probably read the heading on the article covering North East starter but you will find contents was to the effect that the change is not recommended. As it would be necessary to rewind both the field and armature the cost of doing so would be far in excess of the cost of a new 110-volt motor.

Q.—Advise how to connect up an ammeter on Maxwell 12 volt 1919. This is so as to do away with the present "charge and off" type and have one that gives the in put as well as the out going amperes.

If you will examine the wiring layout of the car you will note a small wire running from the starter switch to the ignition assembly. Disconnect this wire at the ignition switch and connect one end of it to one post of the ammeter, then run a wire from the opposite post of the ammeter to the connection on the switch to which the wire was originally fastened. In other words, place the meter in series with the small wire running from the starter switch to the ignition switch. There is only one wire to be used and in the diagram we have on hand it is marked No. 6.



# Motor Age's Flat Rate Forum

## Answers and Discussions on Standardized Automotive Maintenance

Edited by Paul Dumas

### Can Flat Rate Labor Prices Be Standardized?

That there is still some difference of opinion regarding certain phases of the Flat Rate system is evident when one considers the methods used for pricing the maintenance sold. A certain group of car manufacturers advocate that the labor charge to the customer be based on the Flat Rate figure in hours multiplied by the hour rate of the individual institutions selling the repairs. Another group of car manufacturers approve of a standard retail price for the labor involved, regardless of the geographical location of the establishment rendering the service.

There is no denying of the fact that the idea of Flat Rate implies a more or less standard price subject to the same reasonable fluctuation and variations that exist in other lines of maintenance. There are many angles to the discussion at first glance, but in the final analysis the factors of overhead, efficiency of personnel, and repair shop facilities determine the difference in labor selling price. Of these the difference in overhead

burden is without doubt the greatest single item with the small town dealer in most cases having the advantage. In regard to mechanics and repair shop facilities the metropolitan dealer generally has the advantage. In many cases the metropolitan dealer's maintenance department is located in a building too pretentious and of too high a rental. A location out of the high rent district which may mean away from the new car salesroom building is one big point in dealer education that should to some extent, at least, tend to lower the overhead burden, and thus reduce the variation between small and large town establishments.

It is interesting to note that of 13 car manufacturers recommending Flat Rate as officially compiled by their own maintenance departments, seven advocate a standard labor price to the owner regardless of geographical location and six state that anything resembling a uniform price is impossible of fulfillment.

### Eliminates Owner Complaints

From what can be seen from where we sit the bug in standard prices for maintenance labor lies mostly with the metropolitan dealer, who in many cases has not applied as much business sense to the maintenance end of his business as he has to car selling portion of it. The small town dealer has difficulties of his own, but there is reason to believe that an equitable standard price will eliminate owner complaints and allow him to make a little profit, even though that price be slightly higher than charged by his local competitors. If the car owner has been mentally prepared by intelligent factory or distributor contact he will usually not object to paying a price approved by them even though it be slightly higher than the price quoted by some repair shop the sole recommendation of which is its ability to cut prices.

executed on that make of car. Accompanying each operation described are the labor price limits charged by Maxwell dealers in most cities. In connection with these operations it is stated that in only one or two cities will the charge

### FRONT END GEAR AND CHAIN RENEWAL BY FLAT RATE MOTOR AGE'S Flat Rate Forum No. 3

#### The Operation Defined

*Renew all front end gears or chains. Includes removal and installation of full set timing gears or timing chain and retiming of engine.*

For this operation the following authorized flat rate charges are suggested by the maintenance departments of the respective manufacturers applicable to their 1924 and current models unless otherwise indicated.

Mfgs. Car.	Official Designation.	Labor Operation.
Buick sixes	M7-3	\$9.60
Chev. Sup.	55	2.2 hrs.
Chrysler	6903	3.50 hrs.
Durant	115-115A-115B, and 115C	\$6.80
Essex	M11	4.00 hrs.
Fr'klin 10C	10-738	\$6.63
Hudson	M11	4.00 hrs.
Hup'bile R	4-21	3.75 hrs.
Maxwell	1903-1903A	3.50 hrs.
Oakland	7-95 and 7-85	1.90 hrs.
Overland 4	none	4.00 hrs.
Packard 6	M412	4.10 hrs.
Rickbkr 6	M12	3.50 hrs.
Star	1106	\$4.00
Stutz 6-90	370 gears 371 chain	11.50 hrs. 8.00 hrs.
Velie 56, 58	43	4.00 hrs.
Willys K-4	none	5.00 hrs.

exceed the higher figure while in a few communities it will fall below the lower figure. Although the variations are in some cases quite noticeable such information should be of great value to the Maxwell dealer in that it prepares the car owner for a Flat Rate quotation that might otherwise seem exorbitant. A portion of one page of this section of the Maxwell Instruction Book is shown herewith.

#### A Manufacturer's View

Detroit, Michigan.

To the Editor of MOTOR AGE:—We have very carefully checked over the flat rate chart in the October 23 issue of MOTOR AGE and we want to compliment you on the progressive spirit you are showing in bringing flat rate in this way to the attention of dealers and garage men throughout the country. The work you are doing is bound to be of benefit to the industry as a whole and particularly to the dealers and distributors.

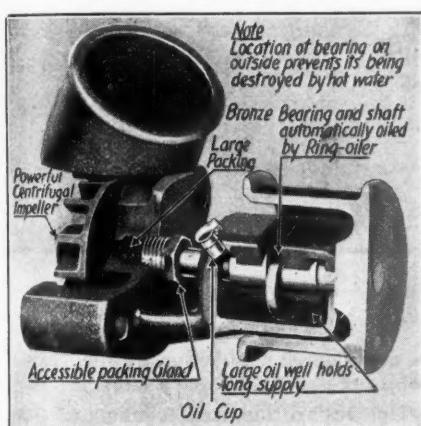
R. C. REUBIL, Service Manager,  
Maxwell Motor Sales Corporation  
Chrysler Motor Corporation.

Crankshaft Main Bearings		
Operation Number	Description	Amount
2010	Remove and install full set of new main bearings. Requires same labor as operation No. 2000	\$24.00 to \$36.00
Crankshaft Connecting Rod Bearing		
2025	Remove and install one new connecting rod, including removal and installation of oil pan and cylinder head, remove carbon.	3.25 to 4.85
(a)	Each additional rod in conjunction with 2025, add.....	1.25 to 1.85
(b)	Tighten other rods in conjunction with 2025, add.....	.50 to .75
2026	Remove and install connecting rods when head and oil pan have been removed.	each 1.25 to 1.85
2027	Tighten connecting rod bearings all, including removal and installation of oil pan.	2.75 to 4.15
Piston, Piston Rings and Piston Pins		
2040	Remove and install new pistons and rings, new pins if necessary, including removal and installation of cylinder head and oil pan, tighten connecting rod bearings and align rods.	8.00 to 12.00
2041	Remove and install one new piston, new rings and pin if necessary, including removal and installation of cylinder head and oil pan, align connecting rods and tighten bearings.	3.50 to 5.25
2042	Remove and install piston rings, full set, including removal and installation of cylinder head and oil pan.	6.00 to 9.00
2043	Remove and install piston rings in one cylinder, including removal and installation of cylinder head and oil pan.	3.00 to 4.50
2044	Remove and install piston pins, full set, including removal and installation of cylinder head and oil pan, align connecting rods and tighten bearings.	4.00 to 6.00
Flywheel Housing		

Maximum and minimum flat rate charges as published in the Maxwell Owner's instruction book

# BOOSTING ACCESSORY SALES

ACCESSORIES as a source of profit in the automotive establishment are well worth the consideration of merchants engaged in the business of selling transportation. The devices which are announced by manufacturers from time to time are produced with a view to adding to the comfort and convenience of motor car drivers. Many automotive merchants handle radio equipment as a source of additional profit and hence are interested in the new type of receivers, etc., which are on the market. Following are the descriptions of automotive accessories and things for the radio fan which have recently been offered:

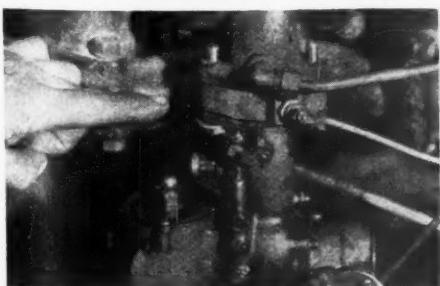


Waterman "4-in-1" pump

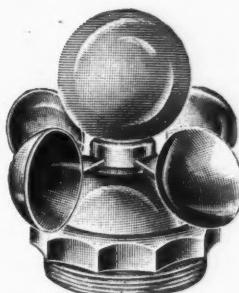
**"D-B Carbureter Heater"**

A new device designed to quicken the starting of automobiles in any weather utilizes an electric heating unit in the gasoline of the machine. This product with a trade name of "D-B Carbureter Heater," is being marketed by Daniel & Bondurant, Clarksville, Tenn.

It consists of a block containing a General Electric heating unit. This block is placed in the gas line of an automobile between the carburetor and the intake manifold. In this way, the gas passes over the heating unit, which is operated from a switch on the dash by the storage battery in the car. As a result of tests the manufacturers claim that about 30 seconds' heating will start a car in any kind of weather.



D-B carbureter heater



Rotascope

**Waterman "4-in-1" Pump**

This pump is provided with a large impellor to secure complete circulation of all the water in the radiator and a continuous flow at any speed. It has no grease cup. A Ring-oiling system provides the supply of lubricant and needs refilling only occasionally, it is said. The price, ready to install, is \$5. It is made by The Waterman Corp., 688 E. Fort street, Detroit, Mich.

**G-G-H Majestic Reproducer**

This is a radio loud speaker made by Grigsby-Grunow-Hinds Co., 4540 Armistice avenue, Chicago, Ill. The model shown in the illustration is WG-10, ebony finish, listing at \$12.50. A feature of the device is its constant tension diaphragm. The diaphragm is "formed" to secure a positive tension in the direction of the poles of the magnet in order to



G-G-H Majestic Reproducer

permit a soft clamping method to be used with a view to eliminating harshness. It is equipped with a projector horn made of solid DuPont pyralin. The height over all is 22 in.; diameter of bell, 13 in. It is furnished complete with five feet of cord. The base is finished in crystalline lacquer. Other models, finished in shell mahogany, Japanese pearl and mother

of pearl, retail for \$15, \$17.50 and \$20 respectively.

**Rotascope**

Wiggler Co., 250 W. 57th street New York City, are the makers of this device, which is a radiator ornament rotating on ball bearings like a windmill. The four rotating wings have shells, the inside of which is enamelled red. The ornament is made of brass and is nickel plated. Height is 3 1/4 in.; width, 3 3/4 in. It is furnished with a Ford cap attached and may be used for any car by removing Ford cap.

**Aeromaster Radio Receiver**

Stewart-Warner Corp., Chicago, have recently placed on the market their Aeromaster, type TRF 5, radio receiver. It consists of two stages of low loss tuned radio frequency amplification, detector and two stages of audio amplification. The circuit, while neither new nor radical in principle, has been developed

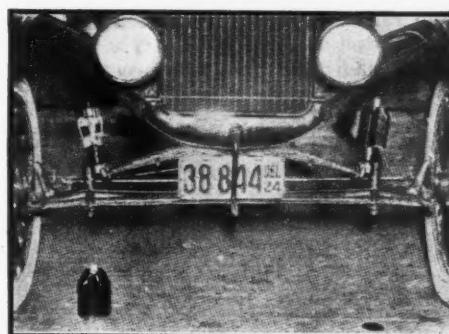


Aeromaster radio receiver

by the use of air core radio frequency transformers. These transformers are tuned by three condensers with plates rigidly connected together. The cabinet is finished in dark walnut. It will be distributed through the Stewart-Warner service stations in the United States and Canada.

**Invincible Shock Absorber**

Invincible Shock Absorber Co., Delaware Trust Bldg., Wilmington, Del., is the manufacturer of these shock absorbers which sell for \$35 per set of four installed in the U. S. A. and Canada. They are mechanically operated and are made to fit any car.



Invincible shock absorbers

# GETTING MORE OUT of the SHOP

PROGRESSIVE maintenance shops are ever on the lookout for tools which will make for increased efficiency and incidentally satisfied customers. The equipment described on this page is designed by its makers to achieve just that objective.

#### Porter's Bolt Clippers

A recent development is the Porter angular bolt clipper. The cutting jaws on this tool are formed at an angle of 30 deg. to the handles so that when the jaws are set flat on a level surface, the handles come up at a 30 deg. angle. Tools which have been made by H. K. Porter, Inc., Everett, Mass., the makers of these clippers, have embodied the side cut type



*Porter angular bolt clipper*

of jaws where the tool, in use, is at right angles to the bolt to be cut. The other extreme is the end cutter type which cuts straight on—the handles of the tool parallel with the bolt. The angular cutter is a compromise between the side cutter and the end cutter. The illustration shows how, with this cutter, a bolt in a difficult position is reached.

#### Yankee Ratchet Brace

North Bros. Mfg. Co., Philadelphia, makers of "Yankee" tools, have just brought out the "Yankee" ratchet brace No. 2100, with a ratchet that works without holding the chuck. It is claimed that the ratchet operates as smoothly as the stem-wind of a watch; that it is unbreakable, dust-proof and moisture-proof.

A small ratchet shifter gives right or



*Yankee ratchet brace*

left-hand ratchet, or rigid adjustment at finger touch. The new patented chuck, it is said, will not loosen in work with any bit; holds round, square, taper, up to half inch. Handles are hard rubber. Sweep handle caps are held by a patented method designed to prevent excessive handle play. Four sizes are furnished: 8 in., 10 in., 12 in. and 14 in. sweeps.

#### Cannon Combine Pump and Pour Oiler

This is a product of the Cannon Oiler Co., Keighsburg, Ill. A separate channel is provided, under control of the finger ring, so that the operator can pour the oil out in a steady stream if desired. All the features of the Cannon pump oilers are retained, and it is designed to force the oil to any desired part.

The pour control is outside of the can so that it can be easily operated or adjusted. The new pouring device also is used for filling large oil cups and is controlled by a movement of the index finger. The pump can also be operated as a pump oiler when the can is upside down.

The large straight channel is designed to allow the free passage of heavy oil, even in zero weather. The oiler is built of steel, tin and one-piece drawn steel, and is unconditionally guaranteed by the makers.

#### Carey Ezola Mats

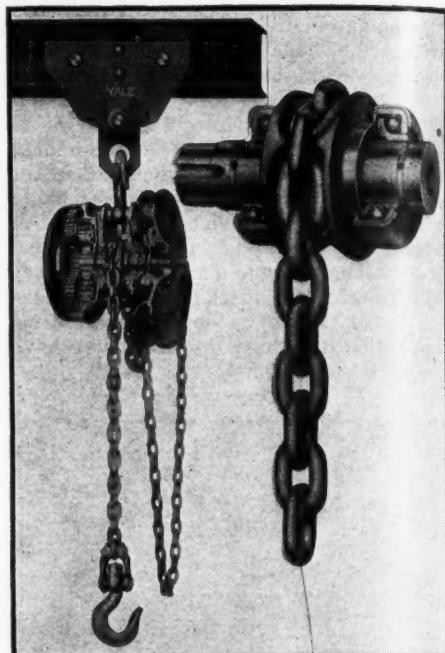
Ezola Mats is made of refined asphalt between two layers of asphalt saturated felt. It is surfaced with mica and bound at the edges with galvanized metal strips. The asphalt body contains innumerable minute air spaces, affording resiliency and compressibility. They are particularly adapted for use in shops where mechanics have to stand for any length of time at a bench or at a machine. These mats are made by the Philip Carey Co., Lockland, Cincinnati, Ohio.

#### Yale Ball-Bearing Spur-Geared Chain Block

The Yale & Towne Mfg. Co., Stamford, Conn., has recently designed and placed on the market a new ball-bearing chain block. The introduction of large capacity ball bearings which support the load sheave is a feature of this chain block.

These ball bearings are so situated that they carry or support the full load, and the manufacturers claim that this latest improvement reduces friction, adds to the life of the block, and greatly increases its efficiency.

By introducing steel bearings to support the load sheave the entire weight of the load and all surges and stresses are now taken on these ball bearings. It is claimed that the number of pounds of hand chain pull required to lift any given load has been much reduced, due



*Yale ball bearing spur-gear chain block*

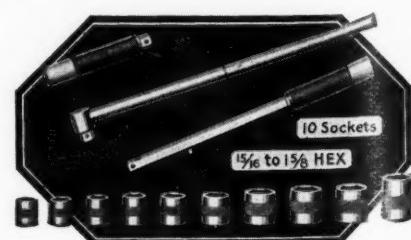
to a lessening in friction at the bearing points of the load sheave shaft.

The design and arrangement of these bearings provides for their being retained by steel and felt dustproof washers, and for continuous lubrication of the bearings, driving pinion, shaft, and planetary transmission. These blocks are being built in a number of sizes, ranging from  $\frac{1}{4}$  to 20 tons capacity.

#### Husky Heavy Duty Socket Wrenches

A heavy duty set of socket wrenches has been brought out by the Husky Wrench Co., Milwaukee, Wis. The wrenches in this set are designed for hard use on trucks, tractors and other heavy machinery. The set provides 120 practical wrench combinations such as offsets, sliding tees, L-type wrenches and speed tees. The parts are machined from solid-bar stock, hardened and rustproof finished.

The price of the No. 120 heavy duty set is \$13.15, list subject to trade discount (slightly higher west of Denver and Canada). The weight is 17 pounds complete in heavy cardboard box.



*Husky heavy duty socket wrenches*

# EDITORIAL

## March

**W**HEN the national automobile shows are held it is mid-winter. A few weeks pass and we approach the month of March and signs of spring are in the air. In those sections of the United States where mildness of climate rules already the gardens are responding to the plow and the hoe and the people are thinking of getting their transportation facilities in order.

There was a time when the arrival of spring meant the beginning of the season of automotive transportation. That is no longer true. The season of automotive transportation now is a 12 months period, for in practically no part of the United States is the motor vehicle laid aside because of cold weather.

But spring still means a great deal to the automotive merchant. The users of transportation naturally take stock of their facilities in the spring, for with the coming of longer days and warmer days they naturally expect to use more miles than in the winter. This means they want their transportation facilities put in the best of order, either through the purchase of new equipment or the rejuvenation of the old. Practically every user of automotive transportation is in the market to buy a new car or to have the old one fixed up. And the transaction either way should prove profitable to the merchant.

And so February gives way to March.

## Profit in Service

**T**HE theme of the second National Automotive Service Convention, to be held in Detroit in May, will be "Profit in Service." There are many automobile dealers and supply merchants to whom the idea expressed in this subject is nothing new. There are others who will never know the full meaning of it. The important thing is that he who will can make a profit from automotive service, and this fact has been so amply demonstrated that the other fellow who still looks upon his service department as a liability has no excuse for persisting in the blind folly that will sooner or later drive him out of business.

## Conservative Buying

**A**BSENCE of speculative buying by large consumers is one of the outstanding characteristics of the steel market. This tendency is commented upon generally by industrial writers. It is noted that manufacturers have been following a policy of conservatism in ordering all supplies and it is gratifying to observe that even now, with schedules going steadily upward in step with a new season and improving conditions, the car makers cling steadfastly to the plan of buying only the materials for which they see a more or less immediate use.

Dealers fearing factory pressure can always feel

easier when it is known that the producer has no great stocks of manufacturing materials to liquidate. When the car maker has overbought he is fully susceptible to the temptation of turning stocks into cars and putting on extra pressure to dispose of the finished product. And that is when the dealer often begins to worry.

There is a sincere desire in the industry, no doubt, not to overload the retailers and to do less forcing than has been practiced in times past,

## Let's Improve the Open Car

**N**OW that enclosed-car design has reached the perfection shown in the popular coaches, broughams and sedans of the present season we would like to see some highly intelligent engineering applied to the open car.

Admittedly the open car is giving way to the enclosed vehicle, but its passing brings keen regret to many a man as he surrenders to the inevitable. Luxury alone never would have been sufficient incentive to put the enclosed car in the place of leadership. The controlling factor has been comfort. The great majority of the millions of motorists in America undoubtedly prefer the open car in mild weather. But in the highly populated sections of the country north of the Mason and Dixon line the weather is so uncertain and at times so harshly severe that the ordinary type of open car is almost useless a considerable part of the time.

Its side curtains are hard to store, difficult to apply, fit poorly, lack transparency, are easily torn and cracked; in short, they are a nuisance, and nobody seems ever to have tried to do much of anything about them. One leading manufacturer has adopted a roll-up type of side curtain that has the virtue of being quickly and easily put in place to form an enclosure for the car. It is a step in the right direction. Further development along that line should be encouraged.

The open car of the future should be quickly and easily converted into a snug enclosure that permits clear and unobstructed vision. And it should be just as quickly and easily restored to the inviting condition of being wide open to the pure air and sunshine of the countryside.

There has been very little progress in open-car design for many years. The superstructure of the ordinary open car of today is little better than that of the two-horse buggy of 25 years ago. Advancement in the design of enclosed cars has been marvelous and we are inclined to believe that it has monopolized the talent of the body engineers for some years. Now that perfection has been so nearly approached in that direction it is possible that these same highly talented designers will turn their attention to the sadly neglected open car, wherein great potentialities lie.

# Consumption Sets Pace for Production

## Industry at Point of Getting Into Seasonal Output Stride

### Turnout Volume at Car Plants Increased in February Despite Its Fewer Days

NEW YORK, March 2.—Just now the automotive industry is at the point of getting into its 1925 stride. Instead of starting out the year, as in 1924, with rush production, manufacturers have held output close to demand. With demand perceptibly increasing, production likewise is growing. February, although a short month, with two holidays, showed an increase in production over January. This, from all signs, will continue at an increased ratio.

In May, June and July high production will be reached. The demand will have asserted itself in no uncertain manner by that time, and the manufacturers are prepared for it. They have been inclined this year to hold back in production until the situation in regard to probable purchases became entirely clear to them.

Clouds of doubt have gradually been disappearing from the horizon. Favorable reports from the trade have come in from all sections. The prosperity that prevails is gradually, but effectively, spreading into the automobile business. Automobile shows everywhere have been successful.

Speculative circles, as is usually the case in active markets, have brought forth a crop of automobile merger rumors. These have proved to be without foundation. There may be some smaller mergers, but the successful manufacturers who have been mentioned in connection with rumors are busying themselves with factory output and distribution plans, not with endeavors to get some other companies out of business. There may be some mergers of minor importance, but more likely in the truck field than in the passenger car section.

## Cheerful Business Signs Are Seen by Bethlehem Executive

BETHLEHEM, Pa., March 2.—Highly encouraging business signs are noted by William H. Davidson, vice president and general manager of the Bethlehem Spark Plug Co., Inc., who has just completed a comprehensive survey of national trade conditions. While Mr. Davidson studied conditions as specifically related to Bethlehem interests his conclusions bear importantly upon the automotive trade in general. Here are some of his observations:

"Wages at new high levels, increased savings accounts, even the fact that life insurance reports the biggest year for 1924 in its history—are business markers for the manufacturer in distribution and consumption of products like ours."

"Coverages and releases with manufacturers in the East are extremely good and show a healthy program for 1925. Two dollar wheat marks up the buying power of the farmer for 1925, which means greater prosperity in our Middle West. The great mail order houses are building this into their 1924 program. The automotive manufacturer and jobber must figure radio as an important influence. Three hundred and fifty million dollars of radio is going into homes that either now own family cars, or would like to."

Mr. Davidson says that the Bethlehem company will establish 150 distributing jobbers over the country, with complete detail service stocks to cover local territory. Many new field salesmen will be added. The company has reached a production of a million pieces a month.

## New Standard Equipment on Packard Six and Eight Models

NEW YORK, March 3.—Both six and eight-cylinder Packard cars now being received by dealers are equipped with the Bijur chassis lubricating system and the Skinner oil rectifier. This new equipment, together with 33 x 5.77 in. balloon tires, disk wheels, spare wheel and tire cover, gasoline gage on dash, front and rear bumpers, automatic windshield wiper, rear view mirror, electric cigar lighter, motometer, combination stop and tail light, snubbers all around, and tire lock, is included in the list prices, which remain as announced at the New York show.

The front spring layout also has been changed, the shackle now being located at the front and the anchor at the rear. This departure from conventional practice doubtless has been made to eliminate the geometrical errors which develop in the steering system and which tend to induce shimmy.

## Attendance Records Broken by Des Moines Automobile Show

### Exhibitors Report Large Number of Sales on Floor of Big Display Hall

DES MOINES, Ia., Feb. 28.—A better attendance than ever before was reported by the officials of the sixteenth annual Automobile Show, sponsored by the Automobile Dealers' Association of this city. The show, which was held Feb. 23 to Feb. 28, inclusive, drew a larger number of out-of-town dealers than ever before. Many of the visiting dealers brought along prospects to see the new models. Exhibitors report an unusually large number of floor sales during the show.

Closed cars occupied the chief attention of the public. Many exhibitors did not display their open offerings, confining exhibits to coupes, coaches and sedans. The new eight-cylinder models were points of interest. The main floor of the building was given over to displays of passenger cars, the side booths being reserved for jobbers and manufacturers of supplies and accessories. Trucks and radio displays were not allowed, all available space being taken by displays of passenger cars and jobbers' exhibits of supplies.

The dealer banquet arranged by A. J. Knapp, secretary of the Iowa Automotive Merchants Association, for Feb. 25 was well attended. Over 50 dealers, who had failed to make reservations in time, were turned away from the banquet hall.

Speakers of the evening included Capt. Eddie Rickenbacker, a former Des Moines man and head of the Rickenbacker Motor Co. W. E. Wissler, general manager of the Herring Motor Co. and president of the Iowa association, acted as toastmaster. The banquet was one of the steps in the plan, recently outlined by President Wissler, to increase the scope of the association's activities.

## Holiday Crowds Capitalized by Dealers in Boston's Motor Row

BOSTON, Feb. 28.—Boston's Motor Row, Monday, Feb. 23, from one end to the other presented a scene somewhat like that of the theatrical district of a big city just before or after a performance where a dozen big successes are playing.

Thousands of people, taking advantage of a holiday, were walking along Commonwealth Avenue looking over the motor cars. Dealers expected this parade and capitalized the opportunity. Even the truck places were open. It rained a bit in the morning, but before noon it cleared up. Many of the sales-rooms had extra decorations. Some had music. Others provided refreshments.

Some of the places received visits from more than 1,000 persons during the day. Many bought cars and many others left their names for demonstrations.

It was just the tonic needed to give the dealers the impetus to go after business with an aggressive spirit. They had spent a lot of money announcing their holiday openings.

## All Dealers in Hartford, Conn., Show Report Pleasing Sales

### New Business and Attendance Records Established at End of Seven-Day Run

HARTFORD, Conn., March 2.—What is termed the "best business show" ever held by the Hartford Automobile Dealers Association, concluded after a seven days' run at the state armory on Broad street. Russell P. Taber, president of the association, said new attendance and sales records had been established.

Twenty-nine Hartford dealers exhibited 36 different makes of cars. A canvass of these 29 dealers brought forth the information that all of them had done well at the show, some far better than they expected. The show emphasized the fact that an earlier date is preferable. Opinion is still and always has been divided on the question of show dates. It is a fact, however, that many sales which could be made in the winter season are strung along until the opening spring due to a late show.

Weather conditions were favorable for the most part. There was one whole day of rain, but even then the attendance was good.

The layout was somewhat crowded. The decorations were much simpler than at previous shows but the big thing to the general public was that the admission was but a quarter instead of 50 cents as in other years.

There was a liberal showing of accessories. A canvass of the accessory exhibitors brought forth the information that the show had been very satisfactory.

In addition to their show exhibits practically all of the dealers arranged special showroom displays, splitting up their forces accordingly.

The show was handled this year by Russell P. Taber, president of the association, and the following show committee: Arthur Fifoot, manager, Daniel A. Harrington, chairman, Dwight A. Burnham, treasurer, and A. A. Nielsen.

## More Than 700 Dealers At Indianapolis' Pre-Show Dinner

INDIANAPOLIS, March 2.—The Indianapolis Automobile Trade Association last Friday night gave the biggest dinner of its history as a pre-show affair and entertained more than 700 dealers, distributors, service and salesmen, with W. B. Burrus of the National Automobile Dealers Association as the chief speaker of the occasion.

In attendance the meeting far outstripped every other previous Indianapolis automotive dinner, but in enthusiasm it went farther yet.

Local sales conditions in Indianapolis, while better during the last month than in January, are not quite so good as elsewhere in the state. Many cars actually sold last month were marked down for March delivery, because of local tax re-

turn time, and this with the added buying mood of the public with spring just over the fence, and the increasing prosperity of the state as a whole, should make the show at least one of the best on record.

## Expect Several Foreign Mounts at Indianapolis Sweepstakes

INDIANAPOLIS, Ind., March 2.—There will be another foreign invasion of the International Motor Sweepstakes at Indianapolis on May 30 of this year according to T. E. (Pop) Myers, secretary-treasurer and general manager of the Indianapolis Motor Speedway Co., who has just returned from Europe, where he spent a month in England, France, Italy, Belgium and Germany.

"What we should like to see," Mr. Myers said in commenting on his trip, "is to have the three truly international races—the French Grand Prize, the Italian Grand Prize and the Indianapolis race—all participated in to as large an extent as possible by representative American and European pilots. There is a closer feeling along this line than there has ever been before, and as a result we expect to have the foreign factory entries of five or six cars at Indianapolis. In addition to the factory entries we should have two or three free lance drivers, if they are successful in obtaining mounts. We hope to be in position to make definite announcement of the cars and drivers within the month."

### CLOSES 15 FLINT CONTRACTS

ST. LOUIS, Mo., March 3.—Fifteen contracts have been closed for the handling of Flint cars in eastern Missouri and southern Illinois by the Spalding Motor Car Co., Flint distributor in this territory.

## Commerce Department Puts January Output at 240,912

### Estimates Output of 212,908 Passenger Cars and 28,044 Trucks for U. S. and Canada

WASHINGTON, March 3.—Figures compiled by the Department of Commerce for January of this year give production of motor vehicles as 212,908 passenger cars and 28,044 trucks, of which 204,607 passenger cars and 26,464 trucks were made in the United States and 8,301 passenger cars and 1,540 trucks were produced in Canada.

The above figures compare with those of January, 1924, as follows: Passenger cars—United States, 283,981; Canada, 9,841; total, 293,822. Trucks—United States, 28,902; Canada, 1,725; total, 30,627.

Complete figures for December, 1924, are: Passenger cars—United States, 174,828; Canada, 7,200; total, 182,028. Trucks—United States, 25,680; Canada, 1,670; total, 27,350.

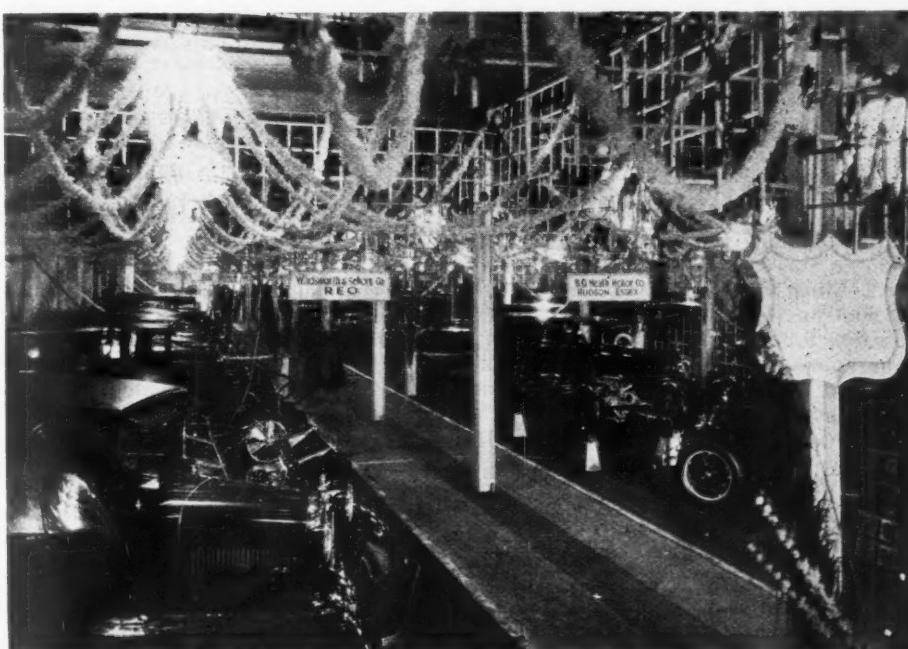
Total production figures for 1924, as compiled by the department, are: Passenger cars, United States, 3,144,515; Canada, 117,765; total, 3,262,280. Trucks—United States, 358,296; Canada, 17,130; total, 275,426.

### TO SELL CLEVELAND

CLEVELAND, O., Mar. 3.—New distributors appointed by the Cleveland Automobile Co. are as follows:

Francis Garage, Dunkirk, N. Y., Lawler and Quinn, Lowell, Mass., F. H. Ahrens, New Orleans, La., McCarty Greene Motor Co., Birmingham, Ala., Wesley R. Reed, Butte, Mont.

## Interior of Carolinas' Automobile Show at Charlotte February 10-17



## New Corporation is Formed To Continue Duesenberg Line

### Production on Largest Scale in Plant's History Expected at Early Date

INDIANAPOLIS, Feb. 28.—Final steps in the Duesenberg reorganization were taken early this week when all assets and property of the old company were bought by the Stockholders' Protective Committee and the Creditors' Committee and turned over to the newly organized Duesenberg Motors Company for \$375,000.

This action terminated the receivership under which the company had been successfully operating since Jan. 3, 1924, and represented the result of cooperative effort on the part of stockholders and creditors who thus have demonstrated their confidence in the future of a car that was a pioneer in two important developments of automotive engineering—the straight eight engine and four-wheel brakes.

The new Duesenberg company starts out in what is regarded by those interested as a most favorable financial position, approximately a million dollars in assets being available after the cancellation of all indebtedness. Capital of the new organization, just incorporated, is \$500,000, officers and directors being as follows:

#### Officers and Directors

President, Fred S. Duesenberg, Indianapolis; vice president, James H. Dunn, Uniontown, Pa.; secretary, Edward Wildman, Indianapolis; treasurer, Harry B. Mahan, Indianapolis. Directors: Fred S. Duesenberg, August Duesenberg, Harry B. Mahan, William S. Iliff, Denver, Colo., Robert P. Jones, Cincinnati, Baarent Ten-Broek, St. Louis, and James H. Dunn.

It is planned to swing the factory into full operation at an early date, according to Fred S. Duesenberg, whose attention and activity contributed largely to the solution of the old company's problems. Plans now are under way to increase production and in a short time it is said the output will more than double previous records. An average annual production of from five to six hundred cars a year is anticipated.

#### Continue Present Prices

It is announced that prices will not be changed, the chassis continuing to sell for \$5250 f.o.b. factory and the various models ranging from \$6250 to \$7800. To prepare for the largest merchandising program in Duesenberg history the company will materially enlarge its distribution organization, important steps to this end already having been taken. In speaking of the reorganization Fred S. Duesenberg said:

"They were all agreed that a car of such unquestioned merit should not be permitted to go by the wayside. Past sales have proven that there is a wide market for just this sort of high grade car, and with the company properly man-

aged and financed to operate efficiently, producing Duesenberg cars in the quantity in which they can be absorbed, they feel sure of success.

"At present we have active representation in a number of the principal cities, including Los Angeles, San Francisco, Pittsburgh, Indianapolis and other points. We are now entertaining propositions for distributorships in other large centers."

The Duesenberg car first sprang into prominence when Jimmy Murphy drove one of this make to victory in the 1921 French Grand Prix, breaking all existing road records. Last year Joe Boyer drove a Duesenberg when he won the Indianapolis race and established a new record here.

#### Stock and Race Cars

While the Duesenberg race car and stock differ quite naturally, it is surprising how much of what the company has learned in racing has been applied to the stock model. The race car in many ways is but a smaller edition of the stock model and, in fact, many of the stock units were used in last year's racing cars with the exception that they were machined smaller to meet the conditions imposed on a 122 cu. in. car.

The Duesenberg brothers who have built racing cars for many years have been firm believers in lightness and much of the performance built into the present stock model is due to the use of light alloys. A light rear axle, to reduce unsprung weight, is obtained, for example, by building the housing from an aluminum alloy. In the same way many of the other units have been made lighter and stronger, the whole design being largely molded from what the company has learned from its extensive experience.

#### 10 CENTS ADMITS TO SHOW

QUINCY, Ill., March 3.—Twenty-five dealers have agreed to take space at the annual automobile show to be held at the state armory, early in March. It has been decided to charge 10 cents admission. The Vogue Decoration Co. has charge of the decorations.

## Open Air Show Follows Parade of Latest Models Through Huntington Streets

HUNTINGTON, W. Va., Feb. 28.—New car week, held in the open air, here, was a success far beyond the expectations of the Huntington Automobile Dealers Association, created more interest, elicited more inquiries and resulted in more sales than any automobile show ever held here.

The show came to a brilliant climax with a banquet at the Elks' club. Approximately twenty-five automobile dealers from nearby cities in West Virginia, Ohio and Kentucky were guests.

One hundred automobile men attended the meeting, the most successful gathering ever promoted by the local dealers'

## Maintenance Equipment Show Set for May 20-23 in Detroit

### Annual Exhibit to Be Held Concurrently with National Automotive Service Convention

NEW YORK, Feb. 27.—The second annual Automobile Maintenance Equipment Show and the National Automotive Service Convention will be held May 20-23 in the General Motors Building, Detroit. Both events are being conducted by the National Automobile Chamber of Commerce with the cooperation of the Motor and Accessory Manufacturers Assn., the National Automobile Dealers Assn., the Society of Automotive Engineers, the Automotive Equipment Assn., the Automotive Electric Assn., and the Automotive Manufacturers Assn.

Service at a profit has been selected as the keynote of the convention program. Sessions will be held from 2 to 5 p. m. on the first three days of the show and each session will be opened by a man of national prominence. Subsequently papers will be presented by well-known trade figures on various methods of making the service station profitable which they have used successfully. The program is being arranged particularly for the dealer and the topics discussed will all be of current interest to him.

#### Miles Is Manager

The show is being managed by Sam Miles of the N. A. C. C. and applications for space will be mailed to prospective exhibitors within the next few days. In allotting space, preference will be given to last year's exhibitors. On the first three days, the show will be open from 10 a. m. to 10 p. m. except during convention sessions and on Saturday from 10 to 6 continuously, no convention session being scheduled for that day.

In order to insure a large dealer attendance, both the show and the convention are being promoted extensively not only by the N. A. C. C. and the organizations cooperating with it, but also by the factory service departments.

association.

The banner day of the show was featured by a parade, in which 125 spic and span automobiles were driven to every section of the city, and an outdoor automobile show which was held on Government Square, Fifth avenue between Eighth and Ninth streets. More than 100 models were on display in the square.

Charles M. Cohen, president of the First Huntington National bank, was the principal speaker at the meeting of the tri-state dealers. He spoke on the "Outlook for 1925" and predicted the present year will be much better and brighter than last year.

## Jordan Motor Company Turns Its Inventory 9 Times in 1924

### Closes Year in Strong Financial Position After Paying Cash Dividends, Report Shows

CLEVELAND, Feb. 28.—The Jordan Motor Co. turned its inventory nine times during 1924. In the same period sales amounted to \$12,009,596. Net earnings before adjustments amounted to \$858,469. The company earned about 30 per cent on invested capital and about 7.15 per cent on volume of business.

These figures are taken from the annual report.

After paying cash dividends of \$445,977, the company closed the year in a strong financial position. Quick assets totaled \$2,055,000 and current liabilities were \$380,000, the ratio being six to one. It has not any bank loans and no obligations except current accounts.

While the production of most manufacturers of automobiles decreased during the last half of 1924, Jordan operations in the last six months of 1924 increased 16 per cent over the corresponding period in 1923.

This record was made despite the fact that Jordan during the year engaged in the manufacture of the line eight models, which brought about a complete change in production.

### DENY DEAF MUTE DRIVING RIGHT

BALTIMORE, Md., Feb. 28.—A deaf-mute, Bird Brushwood, has been denied the right to drive an automobile in Maryland. A decision was handed down this week by the circuit court of Hartford county, which passed on an appeal from Brushwood.

Deaf-mutes in Maryland considered the case a test of the automobile commissioners' powers. Danger to life and property and inability of deaf mutes to hear fire alarms or grade crossing signals were cited as reasons by the attorney general of the state for preventing operation of automobiles by deaf-mutes.

### FULTON GETS NEW PRODUCT

PHILADELPHIA, Feb. 28.—The Fulton Company, Milwaukee, recently purchased the Hudson Motor Specialties Co., Philadelphia, manufacturers of the New Model "B" Crank Case Repair Arm for Ford cars. The Hudson Repair Arm was first put on the market in 1917. It will be manufactured in the Fulton factory in Milwaukee.

### BUILDING NEW GARAGE

KALAMAZOO, Mich., Feb. 28.—Will Kanley, local distributor of the Overland and Willys-Knight lines, is building a new garage and salesroom. Total investment will be about \$50,000.

## Bank Urges Saving For New Car

DETROIT, March 3.—As part of a publicity campaign featuring savings, the National Bank of Commerce of this city has enclosed a card in all monthly statements to subscribers suggesting the advisability of opening a savings account as a means of accumulating for a new car.

The bank's pamphlet, which bears a picture of a car touring, reads:

Start to save for a new car now. You will get a better bargain if you can lay down the cash when you buy the new car. Start a savings account now in the National Bank of Commerce.

## Atlanta Launches Campaign For Jobbing Recognition

ATLANTA, Ga., March 3.—Through the Atlanta Automobile Association the larger accessory, parts and tire jobbers of the city will co-operate with other jobbers and manufacturers in a \$25,000 campaign to be conducted by the Atlanta Merchants and Manufacturers Association, the purpose of which will be to reach southeastern retailers and to boost Atlanta with these dealers as the logical jobbing center of the district. Members are subscribing to the \$25,000 fund in accordance with the volume of business they do.

Newspaper publicity will be primarily used, as well as advertising space in leading trade magazines circulating in this territory.

### SELLING MORE BODY LUMBER

ATLANTA, Ga., Feb. 28.—Sales of thicker dimensions of white ash and maple to the automotive body trades of the north and central western territory recently increased 10 to 15 per cent, with inquiries portending further increases, according to larger lumber manufacturers with general southern headquarters in Atlanta. The business at present is the best it has been in several months, and for the first time since the middle of last year has practically recovered full normalcy. Prices for all thicker dimensions are being well maintained.

### GISHOLT OLD TIMERS BAND

MADISON, Wis., Feb. 28.—Fifty-four men from all departments of the plant here were present when the Gisholt Machine Co. formed an organization of old timers. There were eight 30 to 33-year men, 19 25 to 29-year men and 27 20 to 24-year men. Their service with the Gisholt company totals 1319 years. Carl A. Johnson, president, spoke of the records of the men in the Gisholt service.

## Westcott Starts on Record Spring Production Schedule

### Receipt of Large Orders Gives Company Satisfactory Outlook, Say Factory Executives

SPRINGFIELD, O., Feb. 28.—The Westcott Motor Car Co. has begun the heaviest spring production schedule that it has ever enjoyed, the officials announced. More men have been added to the force. J. M. Rehe, secretary-treasurer, says orders on hand insure a steady satisfactory production schedule for the next three months.

Receipts of large orders, he said, has given the company a very satisfactory outlook. An order for ten Westcott cars for Berlin, Germany, was booked recently. The previous week an order for 250 cars was received from Springfield, Mass., for the New England states. Mr. Rehe says there is no doubt but that this year the spring trade is going to be the steadiest and best they ever had at the Westcott plant.

Driveways, besides shipments, recently have been to Pittsburgh, Buffalo, Toledo, Cincinnati and Columbus.

### MAKE SEVERAL CHANGES

TOWSON, Md., March 3.—The Black & Decker Mfg. Co., makers of electric tools, recently made several changes in the sales force personnel. Leo C. Gehring was transferred from Minneapolis to Buffalo as manager of the Buffalo branch. T. H. Bolling, formerly traveling in Iowa, was made manager of the Minneapolis branch. J. K. Courim, formerly stationed at Indianapolis, was appointed St. Louis branch manager. Le E. Berry, who traveled Texas was made Dallas branch manager. R. W. Somerville, a Canadian representative of Black & Decker, was made manager of the Toronto branch.

### FORD TO GROW FLAX

DETROIT, Feb. 28.—The Ford Motor Co. is preparing for the extensive growing of flax for use in fabric manufacturing and upholstery. An acreage for this purpose is being obtained in the farming districts within 200 miles of the Detroit factories, centering about Ovid, Mich. According to the indicated plans, the machinery for preparing the flax will be installed at this point. The flax, it is understood, will replace cotton to a certain extent for certain manufacturing purposes.

### JOINS BUICK

CHICAGO, March 3.—C. Seymour Williams, formerly sales manager for the Franklin Motor Car Co., St. Louis distributor, recently resigned that position for a connection with the Buick Motor Company's branch in Chicago.

## Automotive Plants at Toledo Rapidly Returning to Normal

### Willys-Overland Payroll Exceeds 10,000 Persons With Number Gradually Increasing

TOLEDO, Feb. 28.—Automotive plants here are rapidly getting back to normal in production and employment.

Report of 51 Toledo plants showed a gain of 760 employees for one recent week to a total of 22,816 as compared with 27,919 at the same time a year ago. Last year at this time most of the plants were operating at peak.

Gains have been consistent since the first of the year.

The Willys-Overland Co. now has more than 10,000 men on the payroll with the number growing gradually. Schedules originally planned for 17,000 cars in February have been advanced to 21,000 and March is counted on for 25,000 cars instead of 20,000 as originally planned.

This will give the first quarter a total of 60,000 cars, which is only 8,000 less than the peak production in the first quarter last year and compares with a first quarter production in 1925 of 44,000 cars.

The Electric Auto-Lite Co. is also increasing its business and the Bock Bearing Co. has just received another large order from a big production car manufacturing company.

Most of the other automotive plants here are increasing schedules and adding workers.

## Parts and Equipment Plants Feeling Brace of Car Pick-up

MILWAUKEE, Wis., Feb. 28.—An increase of 5.2 per cent in the number employed in 50 typical factories in Milwaukee during the past month is ascribed largely to the increased activity demanded of manufacturers of automotive units, parts and equipment. The metal trades as a whole were responsible for the greater part of the gain.

Units and parts makers are feeling the effect of the imminent rise in the passenger-car output to meet the demands of spring selling, which gives every indication of a sharp accentuation in March and April, and doubtless will find dealers requiring stocks in more or less haste, because deliveries to them have been kept in true balance to current deliveries to customers.

### HANDLES REPLACEMENT PARTS

ST. LOUIS, March 3.—H. E. Westmoreland, formerly sales manager of the McQuay-Norris Mfg. Co. recently entered the replacement parts jobbing business at Amarillo, Texas.

The Westmoreland Company, of which H. E. Westmoreland is president, will carry a complete line of replacement parts.

## Export 300 Vehicles to Each Import

WASHINGTON, March 3.—Three hundred to one. That is the approximate ratio of exports to imports in the United States' international trade in automobiles.

Figures just compiled by the Automotive Division of the Department of Commerce show that the United States now sells to foreign countries practically 300 times as many cars and trucks as it buys from them.

In 1924, exports numbered 178,730, and imports 604. The total value of the exports was \$131,733,983, and that of the imports \$841,524. The unit value was \$737 for the former and \$1,393 for the latter, demonstrating again America's supremacy in motor vehicles at low cost.

## Senate Resolution Demands Probe of Gas Price Advances

WASHINGTON, Feb. 27.—An immediate investigation by the Federal Trade Commission into the "recent arbitrary and unwarranted increases" in the price of gasoline was demanded in a resolution introduced in the Senate by Senator Trammell, Democrat, of Florida.

The commission would be authorized to bring anti-trust proceedings against all gasoline companies involved in the increased prices if an investigation warrants this action. This development follows the investigation already under way in a modest manner by a subcommittee of the House district committee into the recent jump of five cents per gallon on gasoline over a period of a week in this city.

### BUY GILL MFG. BRANCH

ST. LOUIS, Mo., March 3.—The Gill Piston Ring Co., 3124 Locust street, which has been the factory branch of the Gill Mfg. Co. for seven years, has been purchased by James T. Jones and Joseph Quinn who will continue to operate the company under the name of Jones and Quinn. The company will handle the Gill line of pistons, piston rings and piston pins and in addition the full line of the Houpert pistons; also a full stock of motor replacement parts. Its territory will include St. Louis and vicinity, the rest of Missouri and parts of Illinois.

### ADMIT "PLACE" FOR BUS

WASHINGTON, Feb. 28.—"There is a place for the bus in transportation as an auxiliary of or supplement to and, in some instances, substitute for electric lines."

This is the pith of convictions unanimously subscribed to here by the executive committee of the American Electric Railway Association at its fifteenth annual mid-year conference and dinner.

## Pierce-Arrow Reports Net of \$751,000 for Last Year

**Development of Series 80 Opened  
Up New Outlets For Products,  
Says President's Report.**

BUFFALO, Feb. 28.—The eighth annual report of the Pierce-Arrow Motor Car Company, issued by President Myron E. Forbes and Charles Clifton, chairman of the board, shows earnings of \$1,930,710 and net earnings, after deductions, of \$751,000. Dividends of \$126,000 on prior preference stock were paid, leaving a balance of \$625,060 for the year to December 31. This surplus compares with \$278,212 at the end of 1923.

In addition to meeting the interest on its bonded debt, payment of the dividends on the prior preference issues, the company also met and absorbed in its operating and capital account all the extra expenses connected with the bringing out of its new Series 80 line of light cars. In the year these involved additions to property and equipment totaling \$1,057,971. The company also paid off approximately \$300,000 of its bank loans.

Net profits of the Pierce-Arrow Finance Corporation, the agency organized for financing the purchase of Pierce-Arrow vehicles, amounted to \$37,194 in the year of 1924.

At the end of the year 1924 the Pierce-Arrow company's current assets totaled \$12,360,107 as against current liabilities, including the bank loans mentioned, totaling \$3,539,997. In other words, current assets of the company are 3.5 times greater than its current liabilities, a notably strong showing.

### New Market Opened

President Forbes in presenting the annual report to the stockholders, said:

"The development of the new model, Series 80, passenger car, referred to in the last annual report, was completed during the last year, and the benefits obtained from this addition to our line of products during the last quarter of 1924 are very gratifying.

"The introduction of the new series with its moderate price has opened up an entirely new market for Pierce-Arrow products, and this has enabled us to extend our points of distribution from 90 to 306, which number will be materially increased during the year of 1925.

"The demand for our motor bus chassis which the company added to its line a year ago, shows a very healthy increase and, as motor bus transportation is being introduced in all localities of the United States, we anticipate a marked acceleration in the sales of this product."

### JOFFRION GOES TO TEXAS

DALLAS, Tex., March 3.—J. M. Joffrion named retail sales manager of the Dallas branch of the Oakland Motor Company, succeeding J. L. LaPrelle who was made traveling representative. The office of director of sales was created and J. C. Stevenson named to fill that position.

## Retail Business in Chicago Zone Continues to Improve

### Dealers Who Found February No Better Than January in the Minority

CHICAGO, March 2—Business in the Chicago retail trade during February continued the tendency toward betterment that was felt to some extent in December and which developed as an apparently established fact in January.

There is no longer doubt as to the general direction of trade in this district, the popular opinion being that the drag which prevailed for so many months last year has been definitely cast off and that dealers now are on the high road toward healthful, normal realizations.

Some of the sales made in February came as the result of leads obtained at the Chicago show, but eliminating such business the month most likely produced better returns than January. This is apparent in reports by many retailers that while the effect of show leads with them was practically nominal the second months business was more satisfactory than that of the first.

#### Some Large Increases

A number of companies claim large increases over January, this group including dealers in cars of all prices. Those who found February no better than the preceding month are in the minority. In other words, the pick-up has been general. Improved business to the extent of from 25 to 30 per cent over January, is reported in exceptional cases. One reliable statistical source covering a good barometric field indicates an average pick-up of ten per cent or more over January in time sales. The

used car situation is well in hand, stocks moving fairly well on the whole and being of about the same proportion that obtained at this time last year and the year before.

## Olds Schedule for Present Year 75 Per Cent Closed Cars

LANSING, Mich., Feb. 28.—In 1923 the number of closed type Oldsmobiles made at the Olds Motor Works, Lansing, Mich., was 33 per cent of the total number of cars manufactured, says a factory statement. In 1924 the percentage of closed Oldsmobiles was just one-half of the entire production. In 1925 the manufacturing schedules call for 75 per cent closed cars.

During the current year the manufacturing schedules at the Olds Motor Works call for 60 per cent of the entire production to be coaches, 15 per cent other closed car types, and 25 per cent open cars.

## Large Crowds Attracted by Peoria's Motor Car Display

PEORIA, Ill., Feb. 28.—More than 100 models of 1925 cars were assembled at the state armory this week at the annual indoor show of the Peoria Automobile Dealers and Accessories association. It was a quarter of a million dollar display and attracted large crowds every afternoon and night.

Special musical features, dancing and other special night features made it a popular show and brought scores of prospects into touch with the dealers. C. W. Coons, secretary of the association, handled arrangements for the event and nearly every dealer and accessory man assisted in some measure on the various committees.

## Bethlehem Spark Plug Co. in Control of Splitdorf Electric

### Negotiations Mark One of Largest Transactions of Year in Automotive and Radio Field

BETHLEHEM, Pa., Feb. 28.—Bringing to a conclusion one of the largest transactions of the year in the automotive and radio field, the Bethlehem Spark Plug Co., Inc., made definite announcement at its offices here that it had acquired control of approximately 80 per cent of the \$4,500,000 outstanding stock of the Splitdorf Electric Co. of Newark.

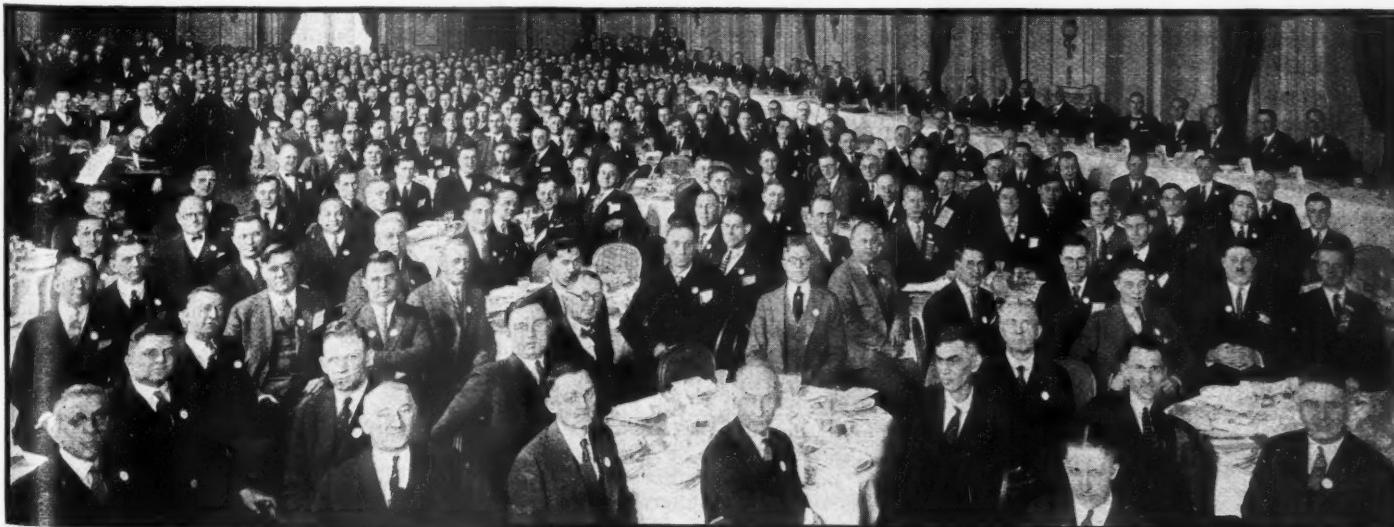
A new company, known as the Bethlehem Spark Plug Co. of New Jersey, has been organized, this name to be changed later to that of the Splitdorf Bethlehem Electric Co. This organization will act as a holding company for both the Bethlehem Spark Plug Co. and the Splitdorf Electrical Co.

E. H. Schwab, now president of the Bethlehem Spark Plug Co., will head the new company. In addition to him, its Board of Directors will include Charles M. Schwab, of the Bethlehem Steel Corp.; M. H. Bartlett, now president of Splitdorf Electrical Co.; C. S. Splitdorf, of the Splitdorf company; C. Rorabeck, vice-president of the Torrington Co.; H. P. Engles of Theodore Shultz & Co. of New York; H. Alvord and W. N. Davidson, general sales manager of the Bethlehem Spark Plug Co.

#### MULLINS INCREASES FORCE

SALEM, O., Mar. 3.—Announcement is made by C. C. Gibbons, president of the Mullins Body Corp., that the company will take on 200 more men immediately in the various departments. Bonuses will be paid to hasten production.

## Laying Plans For a Busy Year



John N. Willys, president of the Willys-Overland Co., addressed the company's dealers at a dinner tendered to them at the La Salle hotel, Chicago, on Jan. 29. The company's production for 1925, he said, will be about 75 per cent closed models, 25 per cent open

## Many New Trade Projects Launched in Southern States

### More Than 200 Expansion Developments Recorded in Dixie for First Month of Year

ATLANTA, Ga., March 3.—The automotive industry in the southern states during January continued to maintain the record established the latter part of 1924 in new companies formed and new construction of garages, sales buildings, etc. More than 200 such projects were announced in the various southern states during January, according to figures compiled by a well known industrial and financing firm in Atlanta.

Several of these individual projects are in the nature of new sales buildings now under construction, a number in excess of \$100,000 each, while there are a few such projects now under way in excess of \$200,000 each.

The present year bids fair to equal the remarkable record established by the automobile industry in this regard during 1924, and may even surpass it if the present ratio is maintained.

### TAKES OVER PARSONS MFG. CO.

DETROIT, Feb. 28.—Parsons Mfg. Co. has been taken over by the Motor Products Corp. in an outright purchase and all manufacturing operations will be transferred at once to the plant of the purchasing company. Under the terms of the purchase Carl B. Parsons, president and general manager of the Parsons company, will become identified with Motor Products in a capacity which will be announced later.

The Parsons company has been manufacturing a line of body hardware for the general motor car body manufacturing trade and recently has broadened its operations to the accessory field. Motor Products has long been a leading body hardware and accessory manufacturer and it is stated that it will merge the Parsons products into its own lines, making them more complete.

### TO REPRESENT CHANDLER

CLEVELAND, O., March 3.—Chandler Motor Car Company has appointed the following new dealers:

Wm. M. Ferris, Kankakee, Ill., Lawler & Quinn, Lowell, Mass., James J. Kilgallen, Schenectady, N. Y., T. J. Driscoll, Victor, N. Y., Nazarie Tetraault, Pawtucket, R. I., The L. E. Gibson Motor Co., Clarksburg, W. Va., E. Eugene Raymer, Fond du Lac, Wis., Bossert Motors, Inc., Manitowoc, Wis.

### SALES GAIN FOR APCO

NEW YORK, Feb. 28.—Apco Manufacturing Co. sales were reported by President Tomas F. Wilson as \$104,285 in January, as compared with \$75,953 in January, 1923.

## Farmers Show How to Sell Cars

ST. JOHN, N. B., March 3.—That it is possible to sell automobiles in the winter season has been ably demonstrated by two Nova Scotia farmers, W. S. Carlyle, of East Mount, and D. C. McDonald, of Antigonish. These two farmers were first and second prize winners in the recently staged farmer Ford owner selling contest. Mr. Carlyle made 18 sales and Mr. MacDonald 15. A large number of these sales were made during the month of December. The presentation of prizes took place recently at Truro, N. S. Four hundred farmers entered the contest.

## Federal Air Appropriations For 1926-27 Pass in Senate

WASHINGTON, Feb. 28.—Authorizing appropriations for Federal aid to the states in highway construction in the sum of \$75,000,000 each for the fiscal years of 1926 and 1927, the Sterling-Dowell road bill passed the Senate. The bill went to the House for concurrence in some minor changes, and then goes to President Coolidge for his signature.

In addition to the \$75,000,000 appropriations for 1926 and 1927 the bill, for each of the same two years, authorizes \$7,500,000 for construction of forest roads and trails.

How the automobile industry could not have developed as it has except for the movement for good roads which has already given the country a number of interstate routes was told the Senate by Senator Phipps of Colorado during the four days' debate which preceded action on the measure. In fact, on numerous occasions during the debate attention was called to the fact that good roads and automobiles bring more pleasure and profit to Americans than any other two factors.

## Senate Passes Bill Relating to Use of Seized Vehicles

WASHINGTON, March 3.—The Senate passed senate bill 3406, relating to the use or disposal of vehicles forfeited to the United States for violation of the customs laws or the national prohibition act. The measure, which had been favorably reported from the Senate Committee on Finance, was passed on the motion of Senator Smoot of Utah.

The bill specifies that vehicles acquired under this act shall be used "only" for official purposes in enforcement of the customs laws or prohibition laws. When a vehicle is no longer needed for such official use the measure directs its disposal in the same manner followed in disposing of other surplus property.

## Automotive Revenue Payments Last Year Under 1923 Total

### Taxes Paid By Industry in 1924 Totaled \$139,201,755.01 Against \$155,796,943.59

WASHINGTON, March 3.—A comparative statement of internal revenue receipts from automobiles, trucks, motorcycles, tires, parts and accessories in 20 of the principal collection districts paying the tax show a decrease of \$16,595,188.58 for the calendar year 1924 from the calendar year 1923, according to a table just made public by the Internal Revenue Bureau here. The tax paid by the automotive industry in 1924 is given at \$139,201,755.01, as compared with \$155,796,943.59 in 1923.

The recapitulation of the collections from the 20 selected districts give the distribution as follows: In 1924 from automobile trucks and wagons \$10,335,369.14, which is \$574,262.05 less than 1923 collections; from other automobiles and motorcycles, \$101,123,621.75, which is \$5,157,340.71 less than the 1923 collections and from tires, parts or accessories, etc., \$27,742,764.12, which is \$10,863,585.82 less than the 1923 collections.

### DEALERS ADDED BY FLINT

FLINT, Mich., March 3.—F. C. Witt, general sales manager of the Flint Motor Company, announces the following new dealers:

Eustace & DeMotte Eggle, Camden, N. J., Lintott Flint Co., Philadelphia, Pa., W. C. Fortney, Milton, Pa., Stone Auto Co., Inc., Stroudsburg, Pa., Zelman S. Robinov, Montrose, Pa., Union Motor Service, Indianapolis, Ind., D. T. Davis, Jeffersontown, Ky., Fehrer Brothers, Beaver Dam, Wis., Mr. A. C. Degner, Merrill, Wis., Hoffman Motor Co., St. Louis, Mo., Jack Ulrich Motor Co., West Frankfort, Ill., Kimbrough Motor Co., Gulfport, Miss., Ripley & Biersdorff, Mankato, Minn., Hilltop Garage, Indianapolis, Ind., F. F. Sprout, Binghamton, N. Y., Kelsey Flint Co., Indianapolis, Ind., South Side Auto Top Shop, Milwaukee, Wis., Burkle's Garage, Eagle River, Wis., Neumann-Smith Co., Appleton, Wis., Foegen's Garage, Kaukauna, Wis., Scearce Motor Co., Lawrenceburg, Ky., Travis W. Wilson, Greensburg, Kan., Stovall & Bohon, Enid Okla., Riverside Sales Co., Oksechebee, Fla., Consolidated Motor Sales, Stuart, Fla., Seymour & Michaels, West Hartford, Conn.

### MACK NET \$6,200,000

NEW YORK, Feb. 28.—Mack Truck, Inc., preliminary report for 1924 shows net income of \$6,200,000, equivalent to approximately \$18 a share on the common stock outstanding, compared with a net income of \$7,003,665, or \$20.71 a share, on the common, in 1923.

### \$20,000 FIRE LOSS

OTTAWA, Ill., Feb. 28.—Damage amounting to \$20,000 was incurred from fire in the warehouse used by A. A. Danielson, local Ford dealer. Twenty cars, farm machinery and motor oil were burned.

## Hudson Plans Extension to Develop 1200-a-Day Capacity

### New Factory Building in Detroit Will Round Out Company's Program of Expansion

DETROIT, March 3.—Plans for a new factory building just made known by Hudson Motor Car Co., will increase its daily capacity from the present approximate 700 figure to a total approximating 1,200 a day. The new building will be adjoining the present factory buildings on Jefferson avenue and will be a general manufacturing building, housing assembly lines and other departments. The expansion is made necessary, the company declares, by the extreme demand for its products, the coach especially, which is now making 90 per cent of the total business.

The new building will be three stories in height and will run 650 feet along the Connors avenue side of the main plant. Work on it will be carried through day and night and without interference with the regular manufacturing schedules in the present buildings. When complete the general shop layout will be changed to fit into the new manufacturing plans which the new building will make possible.

#### Rounds Out Program

The new building will round out a program of expansion which included the purchase of the former Jefferson forge plant and the stamping plant of the Clayton Lambert company. This latter company has been manufacturing stampings for Hudson almost exclusively for some time past, and when the production demands of Hudson rose to a point where it required all the facilities of the Clayton Lambert plant it was taken over.

With the new building and new plants Hudson manufacturing space will be increased to approximately 2,000,000 feet. It is expected that this will be available for manufacturing by early summer, making Hudson one of the largest capacity plants in the industry.

#### ESTABLISH NEW DIVISIONS

CLEVELAND, O., Feb. 28.—In order to better serve in rapidly growing lamp territories, the National Lamp Works of the General Electric Co. will establish three new sales divisions. They will be known as the Southern Lamp Division, with general offices at Atlanta; the Southwestern Lamp Division, with general offices at Kansas City, Mo., and the Northern Lamp Division, with general offices at Minneapolis.

In the east central territory the Banner Electric Division at Youngstown and the Colonial Electric Division at Pittsburgh have been consolidated with the general offices at Pittsburgh and will be known as the Alleghany Lamp Division. Service to both Banner and Colonial trade will be thereby strengthened.

#### TWO MORE BIG RACES

WASHINGTON, Feb. 28.—Two additional races have been added to the A. A. A. list of sanctioned championship events for 1925, according to the complete schedule given out by Richard Kennedell, chairman of the contest board. The two races not included in the list previously published will be as follows:

Baltimore-Washington Speedway, Laurel, Md., June 20.

Same track, Oct. 10.

This makes eleven sanctioned races for the year.

## Milton Wins 250-Mile Race at Speed of 126.88 M.P.H.

LOS ANGELES, March 2.—Tommy Milton in a Miller Special won the 250-mile postponed Washington's Birthday race at Culver City yesterday from a field of 18 starters by making the distance in 1 hour, 58 minutes, 13 seconds, an average speed of 126.88 miles per hour. De Paola, Duesenberg, was second; McDonough, Miller, third; Hartz, Miller, fourth. The others to finish were Kreis, Duesenberg; Bordino, Fiat; Lewis, Miller; Johnson, Johnson Special.

The crowd was estimated at 50,000.

The race was free from accident, but Hartz thrilled the crowd with a sensational skid that whirled him end for end in front of the grandstand when traveling better than 125 miles an hour. The skid was caused by a piece of rubber hurled from a tire. He was in second place at the time.

The day was exceptionally warm, resulting in frequent tire changes, which reduced the average speed. Milton took the lead in the seventy-second lap and was not passed again. The other starters were De Palma, Elliot, Wonderlich, Shafer, Comer, Morton, Hill, Shattuc, Hearne and Duray.

## Boosts Tunnels for Child Safety

LOS ANGELES, March 3.—Harold L. Arnold, the Lincoln automobile dealer here, is credited with originating a plan for the construction of tunnels at all street intersections most generally used by children en route to school. City officials estimate the construction of these tunnels would require an expenditure of approximately \$500,000 and should the city refuse to issue bonds to defray the cost Mr. Arnold proposes to sell tags to motorists at \$1 each.

One tunnel has been built under one of the most heavily traveled boulevards at a cost of approximately \$10,000. The high expense was due to the presence of pipes, conduits and other obstructions below the street surface.

## Denver Show Reveals Outlook For Healthy Year in Trade

### Dealers Generally Optimistic Over Promises of Prosperity and Strong Demand for Cars

DENVER, Colo., Feb. 28.—With more than 1,200 dealers in attendance and with an excellent public patronage Denver's eighth annual automobile show accomplished business results that exceeded all expectations. Influenced by unprecedented demands dealers in all lines of motor cars are increasing their allotments from distributors and it is predicted that business for the automobile trade this summer will break all previous records. The show revealed the highest order of optimism in the trade.

The Denver Automobile Dealers' Association staged its eighth annual exhibit at the City Auditorium beginning Feb. 24 and continuing through the week. While this show was in progress other dealers, under the flag of the Denver Automobile Merchants Association, displayed their wares in their own salesrooms and in hotel lobbies. Competition between the two organizations aroused considerable interest.

#### Big Sugar Beet Crop

Reasons for the expected record sales were not hard to find. Everywhere among visiting tradesmen one heard optimistic reports. One section has promise of a bumper sugar beet crop, with higher prices than usual paid already, returns of which are now in farmers' pockets. Oil developments and revival of silver mining in the mountain districts also add to the cheerful outlook.

Many factory representatives were here during the week and banquets and sales meetings were the order of the day. Closed models at the Auditorium and in the various independent displays attracted the lion's share of attention. Much interest in the new eight cylinder engines was evidenced. In fact, all of the late offerings shared in the public's notice and acclaim.

#### ELMER J. HESS DEAD

CINCINNATI, Feb. 28.—Elmer J. Hess, pioneer manufacturer of automobile parts, died here recently. He retired from active business about three years ago. He was owner of the Hess Spring and Axle Co., of Cincinnati, and he also was president of the Hess-Pontiac Spring and Axle Co., Pontiac, Mich., and the Western Spring and Axle Co., which has factories in several western cities.

#### PEERLESS NAMES DISTRIBUTORS

CLEVELAND, O., Feb. 28.—Among the distributors recently appointed by the Peerless Motor Car Company, are:

Rall-Borschell Motor Co., Cedar Rapids, Iowa, with a franchise covering Benton, Linn, Jones, Iowa, Johnson and Cedar counties; The Motor Mart, Texarkana, Ark., with a territory comprising eleven counties in Arkansas and two in Texas.



# Along Automobile Row



ST. LOUIS, Mo.—The Metropolitan Nash Company with a paid up capital of \$25,000 has been formed to take over the establishment at 2724 North Grand Boulevard which the Southwest Nash Company has maintained for some time. The officers of the new company are C. L. O'Brien, who has been connected with Nash organizations in Denver and Pueblo, Colorado, and Kirksville, Mo.; A. W. Becker, who has been with the Southwest Nash Co., and T. L. Fuller, auditor of the Southwest Nash Co.

ATLANTA, Ga.—The Atlanta branch of Durant Motors, Inc., announces the recent opening of an additional southern wholesale branch at Greensboro, N. C., with W. T. Minor in charge as manager in the North Carolina territory. The branch will handle the Star and Durant business in the two Carolinas.

CINCINNATI, O.—The Gibson Garage Co. has been chartered with an authorized capital of 5010 shares, no par value designated, to do a general automobile garage business of repairing and storing. Incorporators are William H. Grace, S. Edwin P., Gertrude C. and James R. Gibson.

Don Neher, Ford dealer in Oakland, Calif., has announced the appointment of George F. Meyer to the position of credit manager of his organization. Mr. Meyer has been a salesman with the Neher company for many years.

Charles J. Broad, who has been associated with Flint automobiles in San Francisco, with the Durant Motor Company of California factory branch, since the cars were first introduced there, has been named sales manager in charge of Flint sales for the Benson Motor Car Company, newly appointed San Francisco Flint distributors.

Jamie H. Smith, well known San Francisco automobile executive, for many years past actively connected with the California motor trade in various capacities, has been appointed Pacific Coast manager for the Diamond Motor Truck Company of Chicago, according to an announcement received from C. A. Tilt, president of the Chicago manufacturing company.

The Fox Motor Sales Co., 105-111 East Doty street, Madison, Wis., which has a Ford and Lincoln franchise, has purchased property with 24 ft. frontage on Johnson street, between Broom and State streets, 150 feet deep, as a site for a new Ford sales and service station, to be ready about July 1. Neil W. Fox is president of the company.

The Elmer Smith Auto Co., Fond du Lac, Wis., for several years sales representative of the Sterling truck, has been appointed dealer in the Jordan and is moving to new and larger quarters at 36-38 West Second street, Fond du Lac.

OSHAWA, Ont.—C. E. McTavish, general parts and service manager, General Motors of Canada, has been elected a member of the board of education of the city of Oshawa.

General Motors Truck Co. has opened new branches at Jacksonville, Fla., and Dayton, Ohio, according to company announcement. This is understood to be a move in connection with a general branch expansion by the GMC company.

SOUTH BEND, Ind.—David L. Gallup has been elected vice president in charge of plant operations of the Bendix Brake Co. Mr. Gallup has been associated with the automotive industry almost since its beginning. During the war he was with the Nordyke-Marmon Co. in charge of all details in the manufacture of Liberty engines. After five years' association as consulting engineer with the Marmon company he entered the consulting engineering field on his own account, devoting part of his time to the Bendix company.

CLEVELAND, O.—The Bossinger Battery Co., 1307 W. 117 street, has been chartered with a capital of \$50,000 to deal in storage batteries, ignition equipment and accessories. Incorporators are Wil-

liam R. Bossinger, Theodore E. Christian, Frank A. Pohemus, Grace H. Collins and Clara Guenther.

INDIANAPOLIS, Feb. 24.—W. E. Pierce, president of the Hume Body Corp., of Boston, Mass., and one of the foremost designers of automobile bodies in the country, has been retained as chief body engineer and designer of the Nordyke & Marmon Co. He will be located permanently at the Indianapolis offices of the company, according to an announcement by Col. Howard Marmon, vice president in charge of engineering. Mr. Pierce designed the bodies of the 11 new Marmon models announced in November. In his new capacity he will have active charge of body design for the Marmon company.

W. P. Louden, formerly chief engineer of the automotive section of Westinghouse Electric Co. has assumed the position of assistant chief engineer of Dayton Engineering Laboratories Co. Mr. Louden is widely known in his field, having begun with General Electric, from whose technical school he was graduated. He was later connected with United States Light & Heat Corp., and during the war was one of the heads of the aircraft accounting division.

PONTIAC.—In line with its policy of strengthening its dealer organization, Oakland Motor Car Co. has named the Bashaw Oakland Motor Co. as Cleveland dealer, announcement of the appointment being made by C. W. Matheson, vice president and director of sales. The new organization takes over the Oakland branch building with the Oakland retail franchise for Cleveland and vicinity. O. W. Bashaw, who heads the company, has been a notably successful automobile dealer for a number of years. L. J. Marsh, district manager, will move his headquarters to the Keith building from which he will supervise Oakland field activities in the Cleveland district.

AUBURN, Ill.—The Auburn Motor Car Company has been organized with capital stock of \$25,000 by R. B. Foster, R. A. Tribbett and G. H. Tribbett. It is proposed to distribute several lines of motor cars and also handle accessories and other motor vehicle supplies.

Frank N. Nutt, for 25 years with the Haynes Automobile Company and chief engineer since 1910, has joined the AC Spark Plug Company, Flint, Michigan. Mr. Nutt will act as contact man between the management and the engineering department in following details of design, manufacture, installation and performance of AC products from the customer's standpoint.

Arndorfer & Schneider is a new Milwaukee organization which has been granted a Ford franchise and opened for business at 489-491 Prospect avenue.

DETROIT.—A. J. Banta, well known sales executive in the passenger car and truck fields has been appointed assistant to Otto E. Stoll, general manager of the General Motors Truck Co. He will have complete charge of engineering, manufacturing and purchasing. Mr. Banta was sales manager of the Rickenbacker Motor Company.

INDIANAPOLIS.—Henry F. Campbell, who has been prominent in Indiana automotive affairs for 16 years and who has been a director and treasurer of the H. C. S. Cab Manufacturing Company, has resigned and is to locate in Los Angeles where he has been elected vice president and treasurer of the Julian Oil Corporation. A dinner was tendered him here by 60 well known men of the automobile industry.

ATLANTA, Ga.—The Atlanta branch of the Chevrolet Motor Co. announces the appointment recently at Jacksonville, Fla., of the Motor Co. of Florida, 444 West Adams street, as Chevrolet distributors in the north Florida territory.

DETROIT.—J. H. Marks has been promoted to the position of purchasing manager of the Packard Motor Car Co. He

formerly was industrial engineer of the company. District managers of the Packard company held a meeting at the factory with R. H. Chamberlain, general sales manager. Among those present were A. F. Rees, R. W. Carson, S. F. Green, G. S. Platt and J. W. Moranger.

MT. PLEASANT, Ia.—H. E. Rukgaber, operator and owner of the Buick garage in this city, has purchased the big Buick garage owned in Ottumwa by the First National Bank and managed by C. S. Ackley. Mr. Rukgaber and his sons, Ernest and Fred, will operate both garages.

The Frank G. Schenut Company, Baltimore, has bought one of the units of the Mt. Vernon-Woodberry Mills, Baltimore, and is having the property altered and equipped for the manufacture of automobile tires.

The L. W. Peterik Motor Co., 726 National avenue, Milwaukee, has been added to the list of community dealers in the Studebaker line by the John G. Wollaeger Co., Milwaukee, territorial distributor.

A. A. Crumley has resigned as manager of the Milwaukee branch of the Packard Motor Car Co. of Chicago, to accept the position of manager of the Packard branch at Pittsburgh. He is succeeded by N. P. Hanson, who has been manager of the used car department of the Chicago branch for several years and formerly had charge of Packard sales at Davenport, Ia.

The H. K. Smith Company, oldest Ford dealer in Springfield, Mass., has just moved into a new building.

Russell E. Mainland, a production engineer of the Nash Motors Co. at the main works in Kenosha, Wis., was married recently to Miss Lucy Williams, daughter of Mrs. Charles Ferguson of Kenosha. Mrs. Mainland has gained national note as a portrait painter.

NEW YORK.—General Motors Acceptance Corp. reports for 1924 net earnings of \$2,147,177, against \$1,295,789, and a surplus after dividends of \$1,167,177, against \$815,789 the previous year.

FREERPORT, Ill.—C. J. Mogle has been appointed distributor of the Overland and Willys-Knight cars in Stephenson county and has opened a sales agency and service station at 126 East Stephenson street.

DECATUR, Ill.—E. J. Kilbourn, Middle West representative of the General Motors Truck Company, has established a Nash agency at 314 East Main street, Decatur, Ill.

MILWAUKEE.—Thomas J. Neacy, president and chief owner of the Beaver Mfg. Co., formerly manufacturing Beaver engines, was awarded a judgment of \$12,828 in his suit to recover \$13,497 from the defunct Ogren Motor Car Co. of Milwaukee, and Fred G. Smith, its president, claimed to be due for engines furnished for Ogren cars. The suit was entered prior to the time the Ogren company was declared bankrupt in March, 1921.

COLUMBUS, O.—The McCumber-Kaiser Motor Co. has been organized by W. R. McCumber and M. J. Kaiser to handle sales and service for the Hudson and Essex lines. The company has opened a garage at 950 East Main street.

CLINTON, Ia.—W. E. Armstrong has acquired the interests of A. R. Cash, engaged in business with him the last three years in the Dodge Brothers agency here. He will operate under the name of W. E. Armstrong Co.

ELMHURST, Ill.—The Bierman Garage Company has been organized here by Arthur, Charles and Elmer Bierman and a new plant opened at Addison and St. Charles avenues.

Leigh Lynch, general manager of the Pontiac division Fisher Body Corp., has resigned. He will be succeeded by H. E. Brown, manager of the Beaudette division.

# With the Associations

## Issues Convention Call

PEORIA, Ill., Feb. 28—C. W. Coons, secretary, has issued the official call for the annual convention of the Illinois Automotive Trades Association to be held at Urbana, Ill., March 16-17. Headquarters of the association will be maintained at the Lincoln Hotel. The first day will be devoted to general sessions and business with a banquet at night while there will be round table discussions Tuesday. A strong program of speeches has been arranged.

The nominating Committee will submit the following list of recommendations for association offices:

President, H. A. Amerman, Urbana, to succeed C. R. Constant, Springfield; first vice-president, W. E. Butler, Chicago, to succeed himself; second vice-president, F. A. Sperry, Bushnell, to succeed George Kelsall, Joliet; third vice-president, J. S. Goebel, Mendota, to succeed, F. A. Sperry; fourth vice-president, H. D. Rue, Bloomington to succeed J. S. Goebel; treasurer, W. W. Ingram, Peoria, to succeed himself. Directors: R. Haas, Springfield, to succeed H. D. Rue; James Levy, Chicago, to succeed H. E. Halbert, Chicago; R. Tenny, Decatur, to succeed J. A. Hendrick, Decatur; E. T. Bryan, Galesburg, to succeed H. A. Amerman, Urbana. The rest of the board holds over.

## Set Tire Convention Date

NEW YORK, Feb. 28—Selection of the date for the next annual convention,

drafting of a definite working program for the year, consideration of the resolutions adopted at Akron last November and meeting with representatives of the Rubber Association of America in a joint conference, were among the accomplishments of the board of directors of the National Tire Dealers Association at its annual winter meeting in Chicago, January 29 and 30. This was the first time since the convention in Akron that the directors of the national organization met.

The date for the next annual convention in St. Louis has been set from November 17 to 19.

A. I. Click was appointed chairman of a committee on by-laws, which will consider any changes that may be necessary in the working plans of the association so that a complete report and recommendations may be made at the convention in St. Louis.

## Battery Rental Ordinance

CINCINNATI, March 3.—There is now in effect in Cincinnati an ordinance for the protection of renters of storage batteries, its enactment having been brought about by the Battery Service Association. It is now a misdemeanor, punishable by a fine of \$200 or 30 days in jail, or both, to retain a rented battery more than ten days without the written consent of the dealer. In the past the battery concerns have had heavy losses, because they were not protected by law.

## INCREASED BUS DEMAND

NEW YORK, Feb. 28.—To meet the increasing demand from bus operators for deluxe motor equipment, the Mack Co. has placed its initial order of the year for 135 bodies of the sedan and parlor car types.

This order, which calls for 110 parlor car and 25 sedan bodies, was portioned to the Lang Body Co. of Cleveland and the E. J. Thompson Co. of Pittsburgh.

## PLANS LARGE BUILDING

KALAMAZOO, Mich., March 3.—Frank F. Brophy, proprietor of the Brophy-Chevrolet Co., has purchased three-fourths of an entire block in one of the busiest sections of Kalamazoo for \$55,000 and will this spring erect a garage and sales warehouse, 120 by 360 feet, three stories high.

## FORD'S HELP SOUGHT

WASHINGTON, Feb. 28.—Henry Ford has been named a member of the congressional commission which will stage

the greatest historic event in the history of the United States—the celebration of the 200th anniversary of the birth of George Washington to be held in 1932. Although the event is still seven years in the future, plans for it are already underway.

## Motor Cars Blamed for Trolley Losses

WASHINGTON, Feb. 28.—Increased use of private automobiles is given here by the Public Utilities Commission as the reason for the decline in street car passengers which has been going on gradually for some time past.

Reports just filed with the Public Utilities Commissions covering operations during December show that both local street railway systems sustained losses in passengers carried, a compared with the same month of 1923.

## Rubber Association Elects

MONTREAL, Can., Feb. 28.—At the annual meeting of the Rubber Association of Canada, F. E. Partridge, president of the F. E. Partridge Rubber Company, Guelph, Ont., was elected association president. Others elected were: Vice-president, J. D. Hathaway; treasurer, John Westren; assistant treasurer, Joseph O'Mara; manager and secretary, A. B. Hannay.

## New Job for T. K. Johnson

ATLANTA, Ga., Feb. 28.—T. K. Johnson, president of the Atlanta Automobile Association, and general manager of the Atlanta branch of the Olds Motor Works, was elected a vice-president of the Atlanta Retail Merchants' Association at the annual meeting of that body held in January. Mr. Johnson will look after the interests of the automotive industry in the merchants association as a vice-president of the organization.

## Add 2,000 Members

CINCINNATI, Feb. 28.—More than 2,000 new members have been added to the roster of the Cincinnati Automobile Association since December 1, it was announced at a meeting of the organization's board of directors. Up to date, it was reported, 55,700 license tags for 1925 had been issued at the club's various distributing places, for which a total of \$647,453 was paid. Included in the tags issued were 9,000 to owners of trucks.

## FORM ASSOCIATION

MARSHFIELD, Ore., Feb. 28.—The Coos Bay Auto Dealers' Association has been formed, with A. C. Johnson as president, C. E. King, secretary. The first object of the association is to give an automobile show in Marshfield on March 12, 13 and 14. The organization, however, will be continued. Other members of the association are: W. E. Guyer, C. E. Smith, Peter Black, E. W. Barnum, Marischal Keith, Tom B. James, C. A. Wright, C. H. Pate, G. W. McLafferty.

## 21 ENTRANTS FOR RACE

PARIS, Feb. 20.—(By Mail.)—Twenty-one cars figured on the lists for the French Touring Grand Prix July 19, which figures as the most important event of the year for other than racing cars. In addition to being divided up according to piston displacement, the competing cars have to run on a limited amount of gasoline, they must carry ballast equivalent to a full load of passengers, and minimum body dimensions are specified.

## Coming Motor Events

### Automobile Shows

Allentown, Pa.	March 1-8
Lehigh Valley Automobile Show, under the auspices of the Lehigh Automobile Trade Association, E. T. Satchell, president.	
Bethlehem, Pa.	March 22-29
Lehigh Valley Automobile Show, Bethlehem Automobile Trade Ass'n, J. L. Elliott, Mgr.	
Boston	March 7-14
Annual Show, Boston Automobile Dealers' Association, Chester I. Campbell, manager.	
Evansville, Ind.	March 4-7
Automobile and accessory show, Independent Auto Dealers' Association, Chas. Leggett, Jr., secretary.	
Evansville, Ind.	Mar. 9-15
Annual Automobile Show, Evansville Automobile Show Association.	
Fort Worth, Tex.	March 3-10
Third annual passenger car show, Fort Worth Auto Trades Ass'n Bldg.	
Glendale, Cal.	March 7-14
First Annual Glendale Automobile Show, under the auspices of the Glendale Motor Car Dealers Association, H. Elmo LaBreque, manager.	

Great Falls, Mont.	March 3-7
Tenth Annual Silver Jubilee Automobile Show, auspices Montana Automobile Dealers' Ass'n, L. E. Jones, secretary.	
Indianapolis, Ind.	March 2-7
Annual Automobile and Accessory Show, Automobile Bldg., Indianapolis Automobile Trade Ass'n, John Orman, manager.	
Johnstown, Pa.	Feb. 26-March 7
Annual Automobile Show, Johnstown Automobile Dealers' Ass'n, H. Swank, manager.	
Marshfield, Ore.	March 12-14
Automobile Show, auspices Coos Bay Auto Dealers' Ass'n, A. C. Johnson, president.	
Moline, Ill.	March 5-7
Automobile Show, local dealers, Berglung Bldg. R. C. Jasper, chairman.	
Oklahoma City, Okla.	March 23-28
Oklahoma automobile show, under the auspices of the Oklahoma Motor Car Dealers Association, E. T. Bell, secretary.	
Red Bank, N. J.	March 14-21
Tenth Annual Automobile Show, Red Bank Armory, under the auspices of the Monmouth County Automobile Dealers Association, Maurice Schwartz, manager.	
Saginaw, Mich.	March 3-7
Annual Automobile Show, Saginaw Auditorium, under the auspices of the Saginaw Automobile Dealers' Association, R. P. Bishop, manager.	
Santa Ana, Cal.	March 21-28
Orange County Automobile Show, H. Elmo LeBreque, manager.	
St. Louis, Mo.	Feb. 28-March 7
Annual Automobile Show, St. Louis Automobile Dealers' Association, Robert E. Lee, manager.	
Troy, N. Y.	Feb. 28-March 7
Annual Automobile Show, under the auspices of the Troy Automobile Dealers' Association, State Armory, Frank M. Baucus, manager.	
Yonkers, N. Y.	March 2-7
Seventh Annual Automobile Show of Yonkers Automobile Merchants Association, a <i>uspice</i> s Military Company, J. J. Callahan, Pittsfield, Mass., director.	

### Foreign Shows

Geneva, Switzerland	March 20-29
International Motor Exhibition.	

### Conventions

Urbana-Champaign, Ill.	March 16-17
Annual convention, Illinois Automotive Trades Association, Headquarters, Lincoln Hotel, Urbana.	

### INCREASE CAPITAL

KALAMAZOO, Mich., Feb. 28.—Fuller & Sons Manufacturing Company, makers of truck and bus transmissions, have increased their capital stock from \$100,000 to \$250,000 by declaration of a 150 per cent stock dividend.

### TIRE FABRIC MILLS BUSY

ATLANTA, Ga., Feb. 28.—According to information from officials of some of the larger mills in Georgia manufacturing tire fabric, including the Stark Mills, at Hogansville, Ga., one of the largest manufacturers of this product in the country, all these plants are now producing on an almost capacity basis, with orders in hand that insure steady activity for an indefinite period, and give promise that 1925 will prove one of the best years for this line in the South. The plant of the Stark Mills is a new one, completed during 1924, and with an equipment of 35,000 spindles, is the largest tire fabric producer.

### ASK FOR INJUNCTION

BOSTON, March 3.—The New York, New Haven & Hartford Railroad Co. has filed a bill in equity against Fred E. Deister, who operates passenger motor vehicles between this city and Brockton, under the name of the American Carriage Co., seeking to enjoin him from operating on any public highway for hire unless he obtains a license from each city and town.

### Western New York Gasoline Dealers Will Pool Purchasing

ROCHESTER, N. Y., Feb. 28.—Erection of a bulk storage station for service to gasoline dealers in the association is the purpose of the newly formed Western New York Retail Gasoline Dealers Corporation. Forty-six dealers in the city have organized and will purchase and retail gasoline under their own trademark beginning on April 1. Only association members may belong to the newly formed corporation. The corporation will also sell various grades of oil under its own trade mark.

### FORD DEALERS MEET

FLORENCE, Ala., Feb. 28.—About 20 Ford dealers from points within a radius of 75 miles of Florence met here for the purpose of discussing problems common to them and outlining the spring campaign of sales and demonstration. The dealers here were those in the territory of W. W. F. Thweatt of the Memphis branch and were his guests while here at luncheon. In addition to the dealers present a number of Ford salesmen attended.

### McGRAW COMPANY MOVES

CHICAGO, Feb. 28.—The Fred V. McGraw Company, direct factory representative in automotive equipment distribution, has moved its general offices from St. Louis to 108 W. Lake street, Chicago. E. F. Gysin is in charge.

### NEW CLEVELAND DISTRIBUTORS

CLEVELAND, O., March 3.—The Cleveland Automobile Co. has appointed new distributors as follows:

Renshaw Motor Co., Wilkes-Barre, Pa., Crosstown Sales Co., Detroit, Mich., M. L. Isham, Stockton, Cal.

### TO MANAGE CHECKER PLANTS

KALAMAZOO, Mich., March 3.—B. D. De Wesce, an automotive executive from Cleveland, Ohio, has been elected vice president and director of the Checker Cab Manufacturing Company and will be active manager of the local plants, having full charge of purchases, engineering and sales outside of New York City, Chicago and abroad.

Another change in the local factory organization is the appointment of J. H. Tuttle to succeed Louis Goodspeed as chief engineer.

### PROMISES RUBBER GROWING AID

TALLAHASSEE, Fla., March 3.—Governor John W. Martin, after a conference here with E. G. Leibold, secretary to Henry Ford, announced that he would do all that he could in co-operating with the automobile manufacturer in planting rubber trees in the Everglades section. Mr. Ford desires to go ahead with the promotion of the industry on an 8,000 acre tract he owns in Lee and Hendry counties, Mr. Liebold told the governor, but desires information regarding the draining of the land.

## Willys-Overland Show Sales Reported Exceptionally Large

**Company Claims 1241 Orders at Chicago, 297 at Buffalo and 246 at Toledo**

TOLEDO, March 3.—Analysis of the results of recent shows indicates an increased show sales of Willys-Knight and Overland cars, according to factory information.

Sales at the Chicago show are said to have totaled 1,241 cars which necessitated the shipment from this city of three trainloads of motor vehicles. This big booking of the new models is taken as evidence of a big spring business by President John N. Willys.

Buffalo dealers sold 297 cars during the show there and Toledo scored a third place with sale of 246 cars during the show week. Cleveland dealers booked 150 orders which was not far short of the record set at New York show.

### New Export Connections

The Willys-Overland Company has made a number of new connections in the export field, it was announced. Most important probably is the contract with Hampton, Watson & Cia, of Buenos Aires, to take over the distribution of Willys-Knight and Overland cars in Argentina.

Ellis Hampton, head of the company, has been in business there since 1914 and has a record of sales from 93 the first year to 13,376 cars in 1920. He was a recent visitor at the shows in this country.

Other important dealer connections have been made with Auto Americana, at Sao Paulo, Brazil, and Medan, Scorbaya, and Weltevreden, in the Dutch East Indies, where the Toledo cars have always proved popular.

## To Make Air Cleaners and Fuel Pumps in Former Dort Plant

FLINT, Mich., March 3.—The plant of the Dort Motor Car Co. on the east side of Flint taken over by A-C Spark Plug Co. will be completed and equipped at once for manufacture of the A-C air cleaner, and the fuel pump which the company is introducing. The building will also be used in part for the manufacture of ornamental tiles which the company has developed as an outgrowth of its spark plug porcelain department.

The Dort plant is entirely modern and had been used only partially by the Dort company, which, if it had remained in business, had planned to move from its original location to the new buildings. Some of the interior work was uncompleted but will now be pushed through. For the most part the new buildings will be devoted to expanding the lines of the A-C company, the original plant to continue to house the main spark plug department.

The A-C company in addition to the buildings now owned has about 75 acres in Flint for further expansion.

# SQUEEKS and RATTLES

### AN ECONOMISER



Our old friend, Sylvester Tightwad, the original of his species, refuses to put a heater in the family's closed car. Sylvester tells them that the dash light furnishes enough heat.

—Detroit Motor News.

**Limb of the Law—"Yer pinched for speeding!"**

**Sweet Young Thing—"Why, officer, you can't arrest me. This isn't my car, and I haven't any operator's license."**

—Stanford Chaparral.

"Have you put your car into winter storage?"

"No, it costs too much. I sent it to the garage to have the carbon cleaned out, because I know they won't have it back until spring." —Life.

"The automobile certainly is replacing the horse," remarked the man when he found a piece of a tire in the sausage.

—Johns Hopkins Black & Blue Jay.

### REDUCE ARMATURE PRICES

DETROIT, March 3.—Price reductions ranging from 30 to 35 per cent on Delco and Remy armatures are effective as of March 1 according to announcement by United Motors Service, the official field service organization of these manufacturing companies. In making the reduction United Service notes that the price of armatures has always been the biggest single factor causing question by car owners as to electrical service bills.

### NEW SERVICES OFFERED DEALERS

ST. LOUIS, Mo., Mar. 3.—Three new services have been instituted by the Southwest Nash Co., St. Louis Nash distributor, for its associate dealers. One of these is for Illinois dealers only and comprises a list of 1,000 car owners in the dealer's district and names the kind of cars owned and the year made. The list is given to dealers at cost and serves as a prospect list.

An envoy of the service department is sent from the Southwest Nash Company on the invitation of any dealer to organize efficiently his parts and service departments. Eugene Becker is the representative who has been doing this work.

The third service is the installation of

An American in dear old London was bragging about his automobile. He ended his eulogy by declaring:

"It runs so smoothly that you can't feel it, so quietly you can't hear it, has such perfect ignition you can't smell it, and, as for speed—boy, you can't see it."

"But, my word, old dear," interrupted the Briton, anxiously, "how do you know the bally thing is there?"

Middlebury Blue Baboon.

### Famous Wrecks

A —less driver.

—tangle.

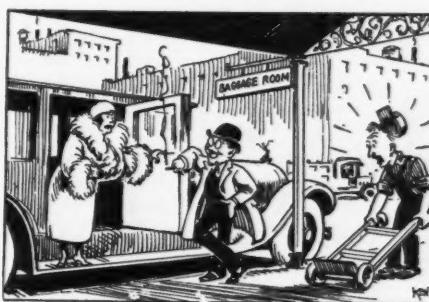
The — of the Hesperus.

The day of —oning.

B—fast.

Charles II. Oxford University Isis.

### FAIR, FAT AND FORTY



Wife: "Why don't you help me out of the auto? You're not so gallant as you used to be when I was a gal."

Hubby: "That's nothing, you're not so buoyant as you used to be when I was a boy."

—Buffalo Bison.

modern accounting systems and is done by the company's auditor, L. T. Fuller.

## 15,000 Schedule by Moon in 1925 Includes 5,000 Eights

ST. LOUIS, Mo., March 3.—Moon Motor Car Company is planning on a production of 15,000 cars this year of which 5,000 will be of the new straight eight type according to Stewart McDonald, president of the concern. The details of the new eight have not as yet been made public but it is expected an announcement will be made shortly.

### TO INCREASE PRODUCTION

STOUGHTON, Wis., Mar. 2.—Plans for a material increase in the output of motor trucks, coaches and buses, and a quantity production of steel dump body trucks are being completed by the Stoughton Wagon Co., Stoughton, Wis., a pioneer wagon manufacturing concern which for several years has concentrated on automotive vehicles. Local capital has absorbed a new issue of \$75,000 preferred and common stock to finance the enlargement, and orders have been placed for additional machinery and other equipments.

## Prices and Weights of Current Passenger Car Models

SHIP.	WT. PASS.	BODY STYLE	PRICE	SHIP.	WT. PASS.	BODY STYLE	PRICE	SHIP.	WT. PASS.	BODY STYLE	PRICE	
AMERICAN	"D-66"			3650	5-p	Brougham	2,590	2708	2-p	Coupe "B"	995	
2985	2-p	Roadster	\$1,950	3020	3-p	"X"		2823	2-p	Spec. Coupe "B"	1,095	
3175	4-p	Sp. Roadster	2,050	3050	5-p	Touring	1,695	2813	4-p	Coupe	1,375	
3260	5-p	Touring	1,695	3380	5-p	Sub. Coupe	2,390	2901	4-p	Spec. Coupe	1,475	
3300	5-p	Sport	1,850	3400	5-p	Sedan	2,485	2995	5-p	"B" Sedan	1,095	
3310	7-p	Touring	1,760	3380	5-p	Victoria	2,390	3077	5-p	Spec. "B" Sedan	1,195	
3190	4-p	Sp. Touring	1,885			"Y"		3020	5-p	Sedan A	1,245	
3470	7-p	Sedan	2,550					3107	5-p	Spec. "A" Sedan	1,330	
3310	5-p	Brougham	2,195	3950	7-p	Touring	2,475	2723	5-p	Coach	1,095	
ANDERSON	"41"			4320	7-p	Sedan	3,325	2823	5-p	Spec. Coach	1,195	
2650	5-p	Touring	\$1,195	CHANDLER	"SS"			DORRIS	"6-80"			
2675	4-p	Sp. Touring	1,445	3090	2-p	Roadster	\$1,795	4120	4-p	Pasadena Tour.	\$4,150	
2925	2-p	Coupe	1,425	3132	4-p	Roadster	1,785	4115	7-p	Touring	4,150	
2875	5-p	Sedan	1,695	3084	5-p	Touring	1,595	4193	4-p	Coupe	4,985	
2925	5-p	Sp. Sedan	1,895	3223	7-p	Touring	1,735	4200	5-p	Sedan	5,550	
		"50"		3284	4-p	Royal Dispatch	1,885	4310	7-p	Sedan	5,800	
2975	7-p	Touring	1,595			Coach	1,595	DUESENBERG	Straight "8"			
3200	7-p	Sedan	1,945	3309	5-p	Chummy Sedan	2,045	3920	3-p	Roadster	\$6,500	
APPERSON	"G"			3469	5-p	Met. Sedan	2,195	3700	5-p	Phaeton	6,250	
3100	5-p	Sp. Phaeton	\$1,850	3428	5-p	Sedan	1,995	3920	7-p	Phaeton	6,750	
3145	3-p	Coupe	2,350	3521	7-p	Sedan	2,195	3980	4-p	Sp. Phaeton	6,500	
3470	5-p	Sp. Sedan	2,395	3598	5-p	Limousine	3,095	4000	4-p	Coupe	7,500	
		"V-8"						4350	7-p	Sedan	7,800	
3815	5-p	Phaeton	\$2,485	CHRYSLER	"Superior"			DU PONT	"D"			
3900	7-p	Phaeton	2,535	1690	2-p	Roadster	\$525	3300	2-p	Roadster	\$2,600	
3955	5-p	Sport Phaeton	2,800	1790	5-p	Touring	525	3400	5-p	Touring	2,600	
3815	7-p	Sport Phaeton	2,900	1955	5-p	Phaeton De Luxe	640	3500	7-p	Touring	2,750	
4180	5-p	Sedan	3,485	2005	4-p	Coupe	725	3625	5-p	Touring Sedan	3,400	
4200	7-p	Sedan	3,585	1880	2-p	Utility Coupe	715	DURANT	"A-22"			
4340	5-p	Sport Sedan	3,750			Coach	735	2235	2-p	Roadster	\$1,080	
4380	7-p	Sport Sedan	3,850	2070	5-p	Sedan	825	2325	5-p	Touring	830	
		"ST 8"						2345	6-p	Touring F. W. B.	940	
3815	5-p	Sp. Phaeton	\$2,550	(112 1/4 in. W. B.)	2805	4-p	Roadster	\$1,625	2405	2-p	Business Coupe	935
3815	3-p	Coupe	2,800			Touring	1,395	2495	4-p	Coupe	1,160	
3815	4-p	Brougham	2,650	2730	5-p	Phaeton	1,495	2605	5-p	Sedan	1,190	
3815	5-p	Sp. Sedan	2,850	2785	5-p	Coupe	1,895	2550	5-p	Coach	1,050	
AUBURN	"4"			2935	4-p	Sedan	1,825	ELCAR	"4-40-41"			
	5-p	Touring	\$795	3060	5-p	Imperial Sedan	2,065	2560	5-p	Touring	\$995	
		"6-43"		3085	5-p	Crown Sedan	2,195	2585	5-p	Demi Sp. Touring	1,095	
2610	5-p	Special Touring	1,395	2909	5-p	Brougham	1,965	2641	5-p	Sportster	1,195	
2900	5-p	English Coach	1,945	2995	5-p	Town Car	3,725	2779	5-p	Sp. Sedan	1,695	
2885	5-p	Sedan	1,595					2900	6-p	Sedan	1,495	
		"8-63"		3225	5-p	Town Car	3,725	2779	6-p	Brougham 8d	1,265	
3225	5-p	Sp. Touring	1,895					2779	5-p	Sp. Brougham	1,395	
3550	5-p	Sedan	2,550	2400	5-p	Touring	8895			"6-51"		
3510	5-p	Brougham	2,395	2600	5-p	Sedan	1,195	2600	5-p	Demi Sp. Tour.	1,220	
3550	7-p	Sedan	2,550					2779	5-p	Sp. Touring	1,420	
		"8-80"		2750	5-p	Touring	1,095					
				2810	5-p	Touring De Luxe	1,195					
				2830	3-p	Coupe	1,295					
				2870	5-p	Spec. Coupe	1,395					
				3040	5-p	Sedan 4 d.	1,495					
				3190	5-p	Sedan De Luxe	1,695					
BARLEY	"G" 6-50											
2750	5-p	Touring	\$1,395	3190	5-p	Sport Sedan	1,725	2007	5-p	Touring	1,585	
2800	5-p	Sp. Touring	1,495	2990	5-p	Brougham	1,545	2779	5-p	Sp. Sedan	1,920	
3100	5-p	Sedan	1,850	2990	5-p	Coach	1,295	2900	6-p	Sedan	1,720	
3150	5-p	Sp. Sedan	2,250					2779	5-p	Brougham	1,490	
BUICK	"Standard"			3675	4-p	Volante Tour.	\$2,325	2779	5-p	Sp. Brougham	1,620	
2750	2-p	Roadster	\$1,150	3795	7-p	West. Tour.	2,325					
2800	2-p	Roadster Encl.	1,190	3675	4-p	Aero-Vol. Tour.	2,475					
2920	5-p	Touring	1,175	4055	5-p	Brouette Sedan	3,225					
2970	5-p	Touring Encl.	1,250	4000	7-p	Royal Sedan	3,225					
2960	2-p	Coupe	1,375	4100	7-p	Royal Limousine	3,325					
3075	4-p	Coupe	1,565									
3185	5-p	Dbl. Service Sedan	1,475	4600	7-p	Touring	\$6,300					
3245	5-p	Sedan	1,665	4500	4-p	Sp. Touring	5,800	4050	7-p	Touring	\$900	
3050	5-p	Coach	1,295	4700	4-p	Coupe	7,150	2130	5-p	Touring	800	
		"Master"		5000	6-p	Sedan	7,650	2305	5-p	Coach	895	
		(120 in. W. B.)										
3285	2-p	Roadster	1,365	DAGMAR	"6-79"			FLINT	"55"			
3355	2-p	Roadster Encl.	1,400	3800	4-p	Sp. Touring	\$3,500					
3465	5-p	Touring	1,395	4200	4-p	Petite Coupe	4,500					
3540	5-p	Touring Encl.	1,475	3700	4-p	Phaeton	3,500					
3770	4-p	Coupe	2,125	3750	4-p	Roadster	3,500					
3850	5-p	Sedan	2,225	3800	6-p	Tourer	3,500					
3560	5-p	Coach	1,495	4200	4-p	Petite Sedan	4,500					
		(128 in. W. B.)		4500	4-p	De Luxe Coupe	4,750					
3485	3-p	Sp. Roadster	1,750	4700	5-p	Sedan	4,700	2400	5-p	Touring	1,075	
3550	5-p	Sp. Touring	1,800	4800	7-p	Sedan	4,750	2720	5-p	Brougham	1,640	
3610	7-p	Touring	1,625			"6-60"						
3690	7-p	Touring Encl.	1,700	3100	2-p	Roadster	1,785	FORD	Without Starter and Dem. Rims			
3745	3-p	Country Club	2,075	3200	4-p	Sp. Touring	1,785	1360	2-p	Runabout	\$260	
3905	5-p	Brougham Sedan	2,350	3150	5-p	Touring	1,985	1494	5-p	Touring	290	
4030	7-p	Limousine	2,525	3400	2-p	Coupe	2,345					
3995	7-p	Sedan	2,425	3500	5-p	Sedan	2,345	1521	2-p	Runabout	345	
3850	7-p	Town Car	2,925					1644	5-p	Touring	375	
CADILLAC	"V-63"			DANIELS	"24-38"			1749	2-p	Coupe	520	
4190	4-p	Roadster	\$3,185	4150	4-p	Touring	\$6,800	1927	5-p	Sedan, Fordor	660	
4280	7-p	Touring	3,185	4765	7-p	Touring	6,900	1882	5-p	Sedan, Tudor	580	
4200	4-p	Phaeton	3,185	4600	4-p	Sedan	7,600					
	5-p	Coach	3,185	5200	7-p	Sedan	7,800	FRANKLIN	"11-C"			
4610	7-p	Sedan	3,585	DAVIS	"90"							
4380	4-p	Victoria	3,275	2650	4-p	M. o' War Road.	\$1,495					
4525	5-p	Landau	3,650	2915	4-p	Legionnaire Tour.	1,495					
4655	7-p	Std. Imperial	4,010	2750	5-p	Phaeton	1,395					
		"Custom Built"		3070	5-p	Sedan	1,995					
		(132 in.)		3065	5-p	Berline Sedan	1,995					
4260	2-p	Coupe	3,975	2700	5-p	Brougham	1,595					
		(138 in.)				"91"		GARDNER	"Series 5"			
4400	5-p	Coupe	4,350	2835	4-p	Roadster	1,795	2520	3-p	Roadster	\$945	
4490	5-p	Sedan	4,550	3020	5-p	Phaeton	1,695	2545	3-p	Spec. Roadster	1,045	
4590	7-p	Suburban	4,650	3245	5-p	Sedan	2,295	2550	3-p	Radio Roadster	1,135	
4655	7-p	Imp. Suburban	4,950	3050	5-p	Brougham	1,895	2555	5-p	Touring	1,095	
CASE	J. I. C.			3215	5-p	Berline Sedan	2,295	2555	5-p	Special Touring	1,095	
3260	8-p	Roadster	\$1,840	DODGE BROTHERS				2650	5-p	Touring De Luxe	1,145	
3290	5-p	Touring	1,885	2473	2-p	Roadster	\$855	2590	5-p	Touring "A"	1,045	
3470	5-p	Sp. Touring	2,160	2598	2-p	Special Roadster	955	2750	5-p	Radio Touring	1,145	
3570	4-p	Sub. Coupe	2,480	2567	5-p	Touring	885</					

## **Prices and Weights of Current Passenger Car Models**

SHIP. WT.	PASS.	BODY	STYLE	PRICE
LOCOMOBILE "48"				
5030 4-p	Sportif Tour.	\$7,400		
5330 7-p	Touring	7,400		
5600 5-p	Victoria Sedan	9,900		
5464 7-p	Brougham	9,900		
5640 7-p	Tour. Limousine	9,500		
5868 7-p	Encl. Drive Lim.	9,900		
5624 7-p	Cabriolet	10,250		
	J-6			
5-p	Touring	1,600		
5-p	Sedan	2,000		
5-p	Brougham	2,100		
	J-8			
3-p	Roadster	2,150		
5-p	Touring	1,785		
5-p	Sedan	2,185		
5-p	Brougham	2,285		
McFARLAN "6" TV				
4600 2-p	Roadster	\$5,400		
4600 4-p	Sport Touring	5,600		
4700 7-p	Touring	5,700		
4900 4-p	Coupe	6,720		
5200 5-p	Tour. Sedan	6,720		
5200 7-p	Tour. Sedan	6,810		
5200 7-p	Sp. Sedan	6,600		
5200 7-p	Sub. Sedan	7,000		
5100 7-p	Limousine	6,900		
5200 7-p	Town Car	9,000		
"Light 6" SV				
3700 8-p	Roadster	2,600		
3600 5-p	Touring	2,600		
3850 4-p	Coupe	3,100		
3850 5-p	Sedan	3,100		
3850 7-p	Sedan	3,200		
MARMON "74"				
3470 2-p	Roadster	\$3,165		
3668 5-p	Phaeton	3,165		
3766 7-p	Touring	3,165		
3861 5-p	Brougham Coupe	3,295		
	Coupe de Luxe	3,455		
3931 5-p	Sedan	3,295		
3921 5-p	Sedan de Luxe	3,775		
	Sedan	3,370		
4036 7-p	Sedan de Luxe	3,850		
4000 5-p	Sedan Limousine	3,900		
4100 7-p	Sedan Limousine	3,975		
MAXWELL "25"				
2130 2-p	Roadster	\$885		
2210 5-p	Touring	895		
2255 2-p	Club Coupe	995		
2440 5-p	Club Sedan	1,045		
2580 5-p	Sedan	1,095		
2595 5-p	Spec. Sedan	1,245		
MERCER "6"				
3-p	Runabout	\$4,500		
5-p	Touring	4,500		
3-p	Raceabout	3,900		
4-p	Sporting	4,500		
3-p	Coupe	6,250		
5-p	Sport Sedan	6,250		
7-p	Tour. Limousine	6,500		
MOON Series "A"				
8-p	Roadster	\$1,250		
2440 5-p	Roadster	1,295		
2460 5-p	Sp. Touring	1,195		
2605 5-p	Sedan 2d	1,595		
2755 5-p	Petite Sedan 4 d.	1,785		
2760 5-p	Touring	1,495		
2920 5-p	Sedan	1,815		
3090 5-p	Petite Sedan	1,915		
Metropolitan				
2860 5-p	Touring	1,515		
3120 5-p	Sedan	1,995		
3190 5-p	Sp. Sedan	2,095		
	London			
3270 5-p	Sp. Touring	1,985		
3590 5-p	Petite Sedan	2,540		
NASH "Special"				
2870 2-p	Roadster	\$1,095		
2960 5-p	Touring	1,095		
3120 5-p	Sedan	1,225		
	"Advanced"			
(121 in. W. B.)				
3320 3-p	Roadster	1,375		
3400 5-p	Touring	1,375		
3556 5-p	Sedan 2 d.	1,485		
3680 5-p	Sedan	1,695		
	"Advanced"			
(127 in. W. B.)				
3480 7-p	Touring	1,525		
3530 7-p	Sedan	2,290		
3750 5-p	Coupe 4 d.	2,190		
3640 4-p	Victoria	2,090		
OAKLAND "6-54"				
2420 3-p	Roadster	\$1,095		
2510 3-p	Sp. Roadster	1,195		
2485 5-p	Touring	1,095		
2550 5-p	Sp. Touring	1,195		
2745 5-p	Coach	1,213		
2620 3-p	Landau Coupe	1,295		
2720 4-p	Coupe	1,495		
2860 5-p	Sedan 4	1,375		
2885 5-p	Sedan	1,545		
	Landau Sedan	1,645		
OLDSMOBILE "30"				
2145 2-p	Roadster	\$890		
2270 2-p	Sp. Roadster	995		
SHIP. WT.	PASS.	BODY	STYLE	PRICE
2200 5-p	Touring	890		
2360 5-p	Sp. Touring	1,015		
2330 2-p	Bus. Coupe	1,045		
2460 4-p	Coupe	1,175		
2410 5-p	Coach	1,075		
2570 5-p	Sedan	1,285		
2740 5-p	DeLuxe Sedan	1,375		
OVERLAND "91" 4				
(100 in. W. B.)				
1769 2-p	Roadster	\$495		
1863 5-p	Touring	495		
2177 2-p	Coupe	635		
2004 5-p	Coupe Sedan	585		
"93" 6				
(113 in. W. B.)				
5-p	Sta. Sedan	985		
5-p	Sedan De Luxe	1,150		
PACKARD "6"				
(126 in. W. B.)				
3165 4-p	Roadster	\$2,785		
3320 5-p	Touring	2,585		
3255 4-p	Sp. Touring	2,750		
3400 4-p	Coupe	2,585		
3515 5-p	Coupe	2,685		
3610 5-p	Sedan	2,585		
Sedan Limousine				
(133 in. W. B.)				
4275 5-p	Sedan Limousine	2,785		
PAIGE "21-24"				
(136 in. W. B.)				
3880 4-p	Runabout	3,850		
3990 5-p	Touring	3,650		
3980 4-p	Sp. Touring	3,800		
4125 4-p	Coupe	4,550		
4200 5-p	Coupe	4,725		
4270 5-p	Sedan	4,650		
4275 5-p	Sedan Limousine	4,700		
(143 in. W. B.)				
4020 7-p	Touring	3,850		
4275 7-p	Sedan	4,900		
4350 7-p	Sedan-Limousine	4,950		
PAIGE "21-24"				
3875 4-p	Phaeton	\$2,165		
3935 7-p	Phaeton	2,165		
4050 5-p	Brougham 4 d.	2,395		
4225 7-p	Sedan DeLuxe	2,840		
4370 7-p	Sub. Limousine	2,965		
PEERLESS "6-70"				
3050 2-p	Roadster	\$2,350		
3175 5-p	Touring	2,285		
3350 7-p	Touring	2,485		
3525 5-p	Coupe	2,495		
3550 5-p	Sedan	2,565		
3725 7-p	Sedan	2,765		
3825 7-p	Limousine	2,925		
Equipoised "8"				
4025 4-p				
4275 4-p				
4275 7-p				
3775 5-p				
4250 5-p				
3750 4-p				
3750 5-p				
Brougham				
"S" (6)				
2-p	Roadster	2,495		
2-p	Touring	2,395		
2-p	Touring	2,495		
2-p	Coupe	3,395		
2-p	Sedan	2,945		
2-p	Sp. Brougham	3,395		
"C" (6)				
4250 4-p	Touring	1,875		
4540 5-p	Touring	1,875		
4550 2-p	Sport Coupe	2,185		
4650 5-p	Coupe Brougham	2,285		
4700 5-p	Sedan	2,475		
4700 5-p	Brougham	2,480		
STERLING-KNIGHT "B" (4)				
3775 5-p	Roadster	\$1,795		
3750 5-p	Touring	1,595		
3750 5-p	Sedan	2,095		
3750 5-p	Coupe Brougham	1,895		
3750 5-p	"B-68"	(127 in. W. B.)		
3750 5-p	"B-68"	(Vogue Series)		
3750 5-p	Roadster	2,985		
3750 5-p	Traveler	3,085		
3750 5-p	Phaeton	2,885		
3750 5-p	Sedan	4,085		
3750 5-p	Brougham	4,100		
3750 5-p	Limousine	4,285		
3750 5-p	Town Car	5,500		
3750 5-p	"C-68"	(Town Car)		
3750 5-p	Roadster	3,185		
3750 5-p	Sedan	4,085		
3750 5-p	Brougham	4,100		
3750 5-p	Limousine	4,285		
3750 5-p	Touring	2,385		
3750 5-p	Coupe	2,985		
3750 5-p	Sedan	3,185		
3750 5-p	Brougham	3,185		
3750 5-p	Limousine	4,285		
3750 5-p	Touring	2,385		
3750 5-p	Coupe	2,985		
3750 5-p	Sedan	3,185		
3750 5-p	Brougham	3,185		
3750 5-p	Limousine	4,285		
3750 5-p	Touring	2,385		
3750 5-p	Coupe	2,985		
3750 5-p	Sedan	3,185		
3750 5-p	Brougham	3,185		
3750 5-p	Limousine	4,285		
3750 5-p	Touring	2,385		
3750 5-p	Coupe	2,985		
3750 5-p	Sedan	3,185		
3750 5-p	Brougham	3,185		
3750 5-p	Limousine	4,285		
3750 5-p	Touring	2,385		
3750 5-p	Coupe	2,985		
3750 5-p	Sedan	3,185		
3750 5-p	Brougham	3,185		
3750 5-p	Limousine	4,285		
3750 5-p	Touring	2,385		
3750 5-p	Coupe	2,985		
3750 5-p	Sedan	3,185		
3750 5-p	Brougham	3,185		
3750 5-p	Limousine	4,285		
3750 5-p	Touring	2,385		
3750 5-p	Coupe	2,985		
3750 5-p	Sedan	3,185		
3750 5-p	Brougham	3,185		
3750 5-p	Limousine	4,285		
3750 5-p	Touring	2,385		
3750 5-p	Coupe	2,985		
3750 5-p	Sedan	3,185		
3750 5-p	Brougham	3,185		
3750 5-p	Limousine	4,285		
3750 5-p	Touring	2,385		
3750 5-p	Coupe	2,985		
3750 5-p	Sedan	3,185		
3750 5-p	Brougham	3,185		
3750 5-p	Limousine	4,285		
3750 5-p	Touring	2,385		
3750 5-p	Coupe	2,985		
3750 5-p	Sedan	3,185		
3750 5-p	Brougham	3,185		
3750 5-p	Limousine	4,285		
3750 5-p	Touring	2,385		
3750 5-p	Coupe	2,985		
3750 5-p	Sedan	3,185		
3750 5-p	Brougham	3,185		
3750 5-p	Limousine	4,285		
3750 5-p	Touring	2,385		
3750 5-p	Coupe	2,985		
3750 5-p	Sedan	3,185		
3750 5-p	Brougham	3,185		
3750 5-p	Limousine	4,285		
3750 5-p	Touring	2,385		
3750 5-p	Coupe	2,985		
3750 5-p	Sedan	3,185		
3750 5-p	Brougham	3,185		
3750 5-p	Limousine	4,285		
3750 5-p	Touring	2,385		
3750 5-p	Coupe	2,985		
3750 5-p	Sedan	3,185		
3750 5-p	Brougham	3,185		
3750 5-p	Limousine	4,285		
3750 5-p	Touring	2,385		
3750 5-p	Coupe	2,985		
3750 5-p	Sedan	3,185		
3750 5-p	Brougham	3,185		
3750 5-p	Limousine	4,285		
3750 5-p	Touring	2,385		
3750 5-p	Coupe	2,985		
3750 5-p	Sedan	3,185		
3750 5-p	Brougham	3,185		
3750 5-p	Limousine	4,285		
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3750 5-p	Coupe	2,985		
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3750 5-p	Limousine	4,285		
3750 5-p	Touring	2,385		
3750 5-p	Coupe	2,985		
3750 5-p	Sedan	3,185		
3750 5-p	Brougham	3,185		
3750 5-p	Limousine	4,285		
3750 5-p	Touring			

**†Chassis only.**

# Current Passenger Car Specifications

*(This list comprises cars distributed on a national basis)*

MAKE AND MODEL	WHEELBASE (In.)	TIRES		ENGINE						Electrical System	Clutch	Gear-set	Universal Joints	REAR AXLE		BRAKES		Steering Gear	Rear Spring			
		Standard Size (In.) <sup>†</sup>	Balloon Equipment	Make	Model	Number of Cylinders, Bore and Stroke (In.)	Rated Horsepower, N.A.C.C.	Valve Arrangement	Piston Material	Oil System	Carburetor Make	Ignition System	Generator and Starter Make	Type and Make	Type and Make	Gear Ratio <sup>‡</sup>	Foot, Type and Location	Hand, Type and Location				
American.....D-66	127	33x4 $\frac{1}{2}$	Yes*	H-Sp	91	6-3 $\frac{1}{2}$ x5	29.40	L	C	3	PS	Str	A-K	P-B&B	B-L	M-Har	F-Sal	5.10	E-R	I-R	None	Lav S-57 $\frac{1}{2}$
Anderson.....41	115	31x5.2	Yes	Cont	7U	6-3 $\frac{1}{2}$ x4 $\frac{1}{2}$	23.44	L	C	4	PC	Zen	Wes	P-B&B	R-Thi	$\frac{1}{2}$ Sal	4.75	E-R	E-T	Mee*	Gem S-58	
Anderson.....50	122	33x4.9	Yes	Cont	8R	6-3 $\frac{1}{2}$ x4 $\frac{1}{2}$	27.31	L	C	4	PC	Zen	Rem	P-B&B	R-Uni	$\frac{1}{2}$ Sal	4.50	E-R	E-T	Mee*	Gem S-58	
Apperson.....6	120	32x5.7	Yes	Own	6	6-3 $\frac{1}{2}$ x4 $\frac{1}{2}$	24.40	L	C	4	FP	Str	Rem	P-Roc	M-Mec	$\frac{1}{2}$ Col	5.10	E-R	I-R	Mee*	Lav J-48	
Apperson.....V-3	130	33x6.7	Yes	Own	8	8-3 $\frac{1}{2}$ x5	33.80	L	C	3	PC	Sch	Rem	D-Own	M-Stl	$\frac{1}{2}$ Own	5.10	E-R	I-R	Mee*	Own J-48	
Apperson "St-Away" "8"	130	32x5.7	Yes	Own	St. "8"	8-3 $\frac{1}{2}$ x4 $\frac{1}{2}$	31.25	L	C	5	PC	Sch	Rem	D-Own	M-Thi	$\frac{1}{2}$ Own	4.63	.....	.....	.....	Ros J-	
	32x6.2																					
Auburn....."4"	108	29x4.4	Yes	Lyco	8	4-3 $\frac{1}{2}$ x5	21.03	L	C	5	PC	Str	Rem	P-B&B	W-G	M-Uni	$\frac{1}{2}$ Col	4.63	E-R	E-T	Mee*	Jac S-57
Auburn.....6-43	111	31x4	Yes*	Cont	7U	6-3 $\frac{1}{2}$ x4 $\frac{1}{2}$	23.44	L	C	5	PC	Str	Rem	P-B&B	P-Lon	M-Uni	$\frac{1}{2}$ Col	.....	B-F	E-T	Mee	Ros S-57
Auburn.....8-63	121	32x6.2	Yes	Lyco	II	8-3 $\frac{1}{2}$ x4 $\frac{1}{2}$	31.25	L	C	5	PC	Sch	Rem	P-B&B	W-G	M-Uni	.....	.....	.....	.....	.....	
Barley.....6-50	118	32x4	No	Cont	7U	6-3 $\frac{1}{2}$ x4 $\frac{1}{2}$	23.44	L	C	4	PC	Str	Del	P-B&B	Ful	R-M&E	$\frac{1}{2}$ Col	5.11	E-R	I-R	None	Jac S-56
Buick....."Standard"	111 $\frac{1}{2}$	31x4.9	Yes	Own	Sta	6-3 $\frac{1}{2}$ x4 $\frac{1}{2}$	21.60	I	C	4	PC	Mar	Del	D-Own	M-Mow	$\frac{1}{2}$ Own	4.90	E-F	I-R	Mee	Jac V-48	
Buick....."Master"	120	32x5.7	Yes	Own	Mast	6-3 $\frac{1}{2}$ x4 $\frac{1}{2}$	27.34	I	C	4	PC	Mar	Del	D-Own	M-Mow	F-Own	4.73	E-F	I-R	Mee	Jac V-47 $\frac{1}{2}$	
Cadillac.....V-63	128	33x5	Yes*	Own	63	8-3 $\frac{1}{2}$ x5 $\frac{1}{2}$	31.25	L	C	3	PC	Own	Del	D-Own	Own	M-Spi	F-Own	4.50	B-F	I-R	Mee	Own N-54
	138																					
Case.....X	122	32x4 $\frac{1}{2}$	Yes*	Cont	8R	6-3 $\frac{1}{2}$ x4 $\frac{1}{2}$	27.34	L	C	4	PC	Ray	Del	D-Own	Own	R-Sne	$\frac{1}{2}$ Col	4.90	E-R	I-R	Hyd	Jac S-49 $\frac{1}{2}$
Case.....JIC	122	32x4 $\frac{1}{2}$	Yes*	Cont	8R	6-3 $\frac{1}{2}$ x4 $\frac{1}{2}$	27.34	L	C	4	PC	Sch	Del	D-Own	Own	R-Sne	$\frac{1}{2}$ Col	4.90	E-R	I-R	Hyd	Lav S-55
Case.....Y	132	33x5	Yes*	Cont	6T	6-3 $\frac{1}{2}$ x5 $\frac{1}{2}$	31.54	L	C	4	PC	Sch	Del	D-Own	Own	R-Sne	$\frac{1}{2}$ Col	4.45	E-R	I-R	Hyd	Jas S-47
Chandler.....SS	123	33x6.0	Yes	Own	0	6-3 $\frac{1}{2}$ x5	29.40	L	C	3	PS	Zen	Rem	P-B&B	Own	R-Sne	$\frac{1}{2}$ Own	4.45	E-F	E-T	Mee	Own S-58 $\frac{1}{2}$
Chevrolet.....Superior	103	30x3 $\frac{1}{2}$	Yes*	Own	Sup	4-3 $\frac{1}{2}$ x4 $\frac{1}{2}$	21.76	I	C	3	PS	Car	Rem	P-B&B	Own	M-Own	$\frac{1}{2}$ Own	3.82	E-R	I-R	None	Own S-54
Chrysler.....Six	112 $\frac{1}{2}$	30x5.7	Yes	Own	Six	6-3 $\frac{1}{2}$ x4 $\frac{1}{2}$	21.60	L	A	7	PC	Bal	Rem	D-Own	Own	M-Own	$\frac{1}{2}$ Own	4.60	E-F	E-T	Hyd	Jax S-53
	118 $\frac{1}{2}$																					
Cleveland....."31"	103 $\frac{1}{2}$	30x4.7	Yes	Own	"31"	6-27 $\frac{1}{2}$ x4 $\frac{1}{2}$	19.84	L	C	3	PC	Joh	Bos	P-B&B	Own	R-Pie	$\frac{1}{2}$ Own	4.90	E-R	E-T	Mee*	CAS S-50
Cleveland.....43	115	31x5.2	Yes	Own	43	6-3 $\frac{1}{2}$ x4 $\frac{1}{2}$	23.44	L	C	3	PC	Sch	Del	P-B&B	Own	R-Sne	$\frac{1}{2}$ Own	4.90	E-R	E-T	Mee*	CAS S-53
Cole.....Master	127	31x7.3	Yes	Nort	311	6-3 $\frac{1}{2}$ x5 $\frac{1}{2}$	39.22	L	A	7	PC	Joh	Del	D-Nor	Nor	M-Spi	F-Col	4.10	E-R	I-R	None	Gen S-57
Cunningham.....V6	132	33x5	Yes*	Own	V6	6-3 $\frac{1}{2}$ x5	45.00	L	C	3	FP	Str	Del	D-Own	Own	R-Sne	F-Tim	4.23	E-R	I-R	None	Gen J-62
Dagmar.....6-60	118	32x4 $\frac{1}{2}$	Yes*	Cont	60	6-3 $\frac{1}{2}$ x4 $\frac{1}{2}$	27.31	L	C	4	PC	Sch	Del	D-B&B	War	M-Spi	$\frac{1}{2}$ Tim	5.10	E-R	E-T	None	Gen S-52
Dagmar.....6-73	133	33x5	Yes*	Cont	60	6-3 $\frac{1}{2}$ x5	33.75	L	C	4	PC	Sch	Del	D-B&B	Bl-L	M-Spi	$\frac{1}{2}$ Tim	4.90	E-R	E-T	None	Gen S-52
Daniels.....24-33	138	33x5	Yes*	Own	24-38	6-3 $\frac{1}{2}$ x5 $\frac{1}{2}$	39.20	L	C	3	PC	Zen	Del	P-Own	Own	M-Spi	F-Tim	4.23	E-R	I-R	None	Ros S-52
Davis.....90	115	31x4	Yes*	Cont	7U	6-3 $\frac{1}{2}$ x4 $\frac{1}{2}$	23.44	L	C	4	PC	Str	Del	P-B&B	W-G	M-Pet	$\frac{1}{2}$ Tim	5.10	E-F	I-R	Hyd	Ilos S-52
Davis.....91	118	32x4 $\frac{1}{2}$	Yes*	Cont	8R	6-3 $\frac{1}{2}$ x4 $\frac{1}{2}$	27.34	L	C	4	PC	Str	Del	P-B&B	W-G	M-Pet	$\frac{1}{2}$ Tim	5.10	E-F	I-R	Hyd	Ilos S-52
Dodge Brothers.....	116	30x5.7	Yes	Own	4	4-3 $\frac{1}{2}$ x4 $\frac{1}{2}$	21.03	L	A	3	Sp	Ste	N.E.	D-Own	M-Mow	$\frac{1}{2}$ Own	4.54	E-R	E-T	None	Own S-55	
Doris.....	132	32x6.2	Yes	Own	6-80	6-4	38.40	I	C	7	FP	Str	Bos	Bos	D-Own	R-Spi	$\frac{1}{2}$ Tim	3.77	E-R	I-R	None	Ros S-60
Duesenberg Straight "8"	134	33x5	Yes	Own	"A"	8-27 $\frac{1}{2}$ x5	26.45	I	A	3	PC	Str	Del	P-Own	R-Cli	W-Own	$\frac{1}{2}$ Own	4.90	I-F	E-T	Hyd	Ros S-59
Dupont.....D	124	32x6.2	Yes	Wis	Y	6-3 $\frac{1}{2}$ x5	27.34	I	C	3	PC	Sch	Bos	D-Own	Cpl	M-Uni	$\frac{1}{2}$ East	4.45	E-R	I-R	Hyd	Jac S-59
Durant.....A-22	109	31x4	Yes*	Cont	Spec	4-3 $\frac{1}{2}$ x4 $\frac{1}{2}$	24.03	I	A	3	PC	Til	A-L	P-Own	War	M-Spi	$\frac{1}{2}$ Ad	4.33	E-R	I-R	Mee*	War S-50 $\frac{1}{2}$
	110 $\frac{1}{2}$	31x5.2	Yes	Own	6-21 $\frac{1}{2}$	4-3 $\frac{1}{2}$ x4 $\frac{1}{2}$	17.32	L	A	3	Sp	Bos	Bos	D-Own	M-Spi	$\frac{1}{2}$ Own	5.60	E-R	I-R	None	Own S-54 $\frac{1}{2}$	
Elcar.....4-41	112	31x4	Yes*	Lyco	CF	4-3 $\frac{1}{2}$ x5	21.03	L	A	5	PC	Zen	A-L	P-B&B	W-G	M-Mee	$\frac{1}{2}$ Sal	4.70	E-R	E-T	Mee*	Ros S-51
Elcar.....6-51	113	31x4	Yes*	Cont	7U	6-3 $\frac{1}{2}$ x4 $\frac{1}{2}$	23.44	L	C	4	PC	Str	A-L	P-B&B	W-G	M-Mee	$\frac{1}{2}$ Sal	4.70	E-R	E-T	Mee*	Ros E-51
Elcar.....6-61	114	32x6.2	Yes	Cont	8R	6-3 $\frac{1}{2}$ x4 $\frac{1}{2}$	27.31	L	C	4	PC	Str	Del	P-B&B	W-G	M-Har	$\frac{1}{2}$ Sal	4.70	E-R	I-R	Mee*	Ros S-51
Elcar.....8-80	127	32x6.2	Yes	Lyco	H	8-3 $\frac{1}{2}$ x4 $\frac{1}{2}$	31.25	L	C	5	PS	Sch	Del	P-B&B	W-G	M-Spi	$\frac{1}{2}$ Sal	4.71	E-F	E-T	Hyd	Ros S-58
Essex.....6	110 $\frac{1}{2}$	31x5.2	Yes	Own	6-21 $\frac{1}{2}$	4-3 $\frac{1}{2}$ x4 $\frac{1}{2}$	17.32	L	A	3	Sp	Bos	Bos	D-Own	M-Spi	$\frac{1}{2}$ Own	5.60	E-R	I-R	None	Own O-43 $\frac{1}{2}$	
Flint.....40	115	30x5.2	Yes	Cont	6-W	6-3 $\frac{1}{2}$ x4 $\frac{1}{2}$	23.44	L	C	4	PC	Car	A-L	P-Own	War	M-Spi	$\frac{1}{2}$ Ad	4.77	E-F	E-T	Hyd	Ros S-50
Flint.....55	120	32x6.2	Yes	Cont	55	6-3 $\frac{1}{2}$ x5	27.34	L	C	7	PC	Str	DeJ	P-Own	War	M-Spi	$\frac{1}{2}$ Ad	4.77	E-F	I-R	Hyd*	War S-50
Ford.....I	100	30x3 $\frac{1}{2}$	No	Own	T	4-3 $\frac{1}{2}$ x4 $\frac{1}{2}$	22.50	L	C	3	Sp	Kin	Own	D-Own	M-Own	$\frac{1}{2}$ Own	3.63	E-T	I-R	None	Own O-43 $\frac{1}{2}$	
Franklin.....11 C	119	31x5.2	Yes	Own	10-C	6-3 $\frac{1}{2}$ x4 $\frac{1}{2}$	25.35	I	A	7	PC	Str	Dyn	P-B&B	Own	M-Spi	$\frac{1}{2}$ Own	4.73	E-T	E-R	None	Own E-38
	125		</td																			



## Better Bearings —More Sales

A SERIOUS proportion of the trouble which car owners have is due to failure of bearings. The actual cost of the new bearing may be small, but the cost of pulling the axle or other labor involved, is often enough to sour a man on his car.

That sort of thing hurts your sales terribly, as you know all too well. The only remedy which many car manufacturers have found is the new type Bock Taper Roller Bearings. These quality bearings of chrome nickel steel with the ball-headed rollers have a record of satisfactory performance that is absolutely convincing. Have you seen our booklet, "Quality Built Into the Car"?

THE BOCK BEARING COMPANY  
TOLEDO, OHIO

**BOCK**  
*Quality* **TAPER ROLLER**  
**B E A R I N G S**

# Current Passenger Car Specifications

*(This list comprises cars distributed on a national basis)*

MAKE AND MODEL	Wheelbase (Ins.)	TIRES		ENGINE								Electrical System	Clutch	Gear-set	Universal Joints	REAR AXLE		BRAKES		Steering Gear	Rear Spring				
		Standard Size (Ins.) <sup>†</sup>	Balloon Equipment	Make	Model	Number of Cylinders, Bore and Stroke (Ins.)	Rated Horsepower, N.A.C.C.	Valve Arrangement	Piston Material	Number of Main Crankshaft Bearings	Oiling System	Carburetor Make	Ignition System	Generator and Starter Make	Type and Make	Make	Type and Make	Foot Type and Location	Hand Type and Location	Four Wheel Brake, Type					
Paige.....	131	33x6.7	Yes	Cont	10A	6-3½x5	33.75	L	C	4	PC	Ray	A-K	Rem	D-Lon	W-G	½ Tim	4.90	E-R	E-T	Hyd*	Gem	S-61½		
Peerless.....	70	33x6.2	Yes	Own	70	6-3½x5	29.40	L	C	7	PC	Joh	Del	D-Own	M-Spi	½ Tim	4.66	E-F	I-R	Hyd	Gen	S-54			
Peerless, Equipoised "8".....	128	33x6.6	Yes	Own	67	8-3½x5	33.80	L	C	3	PC	Str	Del	D-Own	M-Spi	½ Tim	4.00	E-R	I-R	Hyd	Gen	S-60			
Pierce-Arrow.....	33	33x5	No	Own	33	6-4x5½	38.10	T	C	7	PC	Fow	Del	D-Own	M-Spi	½ Own	4.29	E-R	I-R	Mec*	Own	7			
Pierce-Arrow.....	"80"	130	32x5.7	Yes	Own	"80"	6-3½x5	29.40	L	C	7	PC	Own	Del	P-B&B	B-L	M-Spi	½ Tim	4.45	I-F	I-R	Mec	Gen	S-58½	
Reo.....	T6	120	32x6.2	Yes	Own	T6	6-3½x5	24.31	G	A	4	PS	Sch	NE	NE	D-Own	M-Own	½ Own	4.70	E-R	I-R	None	Own	S-54½	
Revere.....	"4"	131	32x6	Yes*	Mons.	4-4½x6	18.23	H	A	2	PC	Str	Bos	Wes	D-B-L	B-L	M-Spi	½ Own	3.44	I-R	E-R	Hyd*	Gen	S-56½	
Revere.....	25	131	32x6.2	Yes	Cont	6-J	6-3½x5	32.75	H	C	4	PC	Sch	Wes	D-Ful	Ful	M-Spi	¾ Col	3.75	I-F	E-T	Mec	Gen	S-56½	
Rickenbacker.....	D	117	31x5.2	Yes	Own	D	6-3½x5½	25.35	L	C	7	PC	Str	Bos	D-Own	M-Mec	½ Own	4.63	I-F	E-T	Mec	Gen	S-57		
Rickenbacker.....	A	121½	32x5.7	Yes	Own	A	8-3½x5½	28.60	L	C	3	PS	Zen	Del	D-Own	M-Mec	½ Own	5.10	I-F	E-T	Mec	Gen	S-59		
Roamer.....	6-54-E	118	32x4½	No	Cont	12XD	6-3½x5½	29.40	L	A	3	PS	Str	Spl	P-B&B	R-M&E	Ful	¾ Tim	4.60	E-R	I-R	Mec*	Jac	V-53½	
Roamer.....	4-75-E	128	32x4½	No	Dues	G1	4-4½x6	28.90	H	A	3	FP	Str	Bos	Wes	D-B-L	B-L	R-M&E	¾ Tim	4.63	E-R	I-R	Mec*	Jac	V-53½
Rollin.....	G	112	31x5.2	Yes	Own	G	4-3½x5½	16.90	L	A	4	PC	Til	Cou	P-B&B	Mun	½ Sal	5.10	I-F	I-F	Mec	Ros	0-46		
Rolls-Royce.....	40-50	143½	33x5	No	Own	40	6-4½x4½	48.60	L	A	7	PC	Own	Kown	M-Own	F Own	3.72	I-R	I-R	None	Own	S-54½			
Stanley.....	252	122	31x4.9	Yes	Own	252	2-4x5	13.00	X	C	2	Sp	Non	Non	R-The	½ Own	4.50	E-F	I-R	Hyd	Ros	S-56			
Star.....	4	102	30x3½	Yes*	Cont	Spec	4-3½x4½	18.23	I	A	3	PK	Til	A-L	P-Own	War	M-Spi	½ Ad	4.87	E-R	I-R	Mec*	War	S-49½	
Stearns-Knight.....	C	121	32x6.2	Yes	Own	K-ii	6-3½x5	25.35	X	C	4	PC	Joh	DeJ	D-M&E	Own	R-Cli	½ Own	5.30	E-R	I-R	Hyd*	Ros	V-50	
Stearns-Knight.....	B	119	33x4½	Yes*	Own	Kni	4-3½x5½	22.50	X	C	3	PC	Joh	A-K	D-Own	R-Cli	½ Own	4.50	E-R	I-R	Hyd*	Ros	V-50		
Stearns-Knight.....	S	130	33x6.0	Yes	Own	Kni	6-3½x5	29.40	X	C	4	PC	Joh	DeJ	D-M&E	Own	R-Cli	½ Own	4.00	E-R	I-R	Hyd	Ros	V-50	
Sterling-Knight.....	125	32x4½	Yes*	Own	Kni	6-3½x5½	25.35	X	C	7	FP	Str	Wes	D-Ful	Ful	½ Tim	5.09	E-R	I-R	H	Ros	S-58			
Stevens-Duryea.....	G	138	33x5	Yes*	Own	G	6-4½x5½	47.25	L	C	4	PS	Str	Bos	D-B-L	B-L	M-Spi	F Tim	3.76	E-R	I-R	None	Ros	S-57½	
Studebaker.....	Sta. Six	113	31x5.2	Yes	Own	ER	6-3½x4½	27.34	L	C	4	PC	Str	Wag	P-Own	Own	R-The	½ Own	4.18	E-R	E-T	Hyd*	Own	S-50½	
Studebaker.....	Spec. Six	120	32x6.2	Yes	Own	EQ	6-3½x5	29.40	L	C	4	PC	Str	Wag	P-Own	Own	M-Spi	½ Own	4.36	E-R	E-T	Hyd*	Own	S-56	
Studebaker.....	Big Six	127	31x7.3	Yes	Own	EP	6-3½x5	36.04	L	C	4	PC	Bal	Wag	P-Own	Own	M-Spi	½ Own	3.69	E-R	E-T	Hyd*	Own	S-56	
Stutz.....	693-4	120	32x4½	Yes*	Own	691	6-3½x5	29.40	I	C	3	PC	Str	Ren	P-B&B	W-G	M-Mec	½ Tim	5.10	E-R	I-R	None	Gen	S-61½	
Stutz.....	695	130	32x4½	Yes*	Own	691	6-3½x5	29.40	I	C	3	PC	Str	Ren	P-B&B	W-G	M-Mec	½ Tim	4.90	E-R	I-R	Hyd*	Gen	S-61½	
Templar.....	122	33x4	No	Own	.....	6-3½x5	27.34	L	C	3	PS	Til	Dyn	P-M&E	W-G	R-Sus	¾ Sal	5.10	I-F	E-T	Mec	Ros	S-54		
Velie.....	60	118	31x5.2	Yes	Own	50	6-3½x4½	24.38	I	C	4	FP	Str	Wes	P-B&B	Mun	½ U.D.S.	½ Own	5.10	E-F	E-T	Hyd	Own	S-55	
Westcott.....	44	120	32x6.2	Yes	Cont	8R	6-3½x4½	27.34	L	C	4	PC	Str	Del	P-B&B	W-G	M-Pet	½ Col	4.90	E-R	E-T	Hyd*	Gen	S-57½	
Westcott.....	60	118	32x6.2	Yes	Cont	8R	6-3½x4½	27.34	L	C	4	PC	Str	Del	P-M&E	W-G	M-Pet	½ Col	4.63	E-R	E-T	Hyd*	Gen	S-56	
Wills Ste. Claire. ABC63	121	32x6.2	Yes	Own	ABC	8-3½x4	33.80	I	C	3	FP	[Zen] Sch	Del	P-Own	M-Spi	½ Eat	4.45	E-R	I-R	(None)	Own	S-51½			
Wills Ste. Claire. "W-6"	128	32x6.0	Yes	Own	"W-6"	6-3½x5½	25.35	I	C	7	PC	Sch	Del	P-Own	Own	M-Spi	¾ Eat	4.45	E-F	E-T	Hyd	Own	S-58		
Willys Knight. .65 & 67	118	33x4½	Yes	Own	65	4-3½x4½	21.03	X	C	3	PS	Til	A-L	D-Own	Own	M-Spi	¾ Own	4.44	E-R	I-R	Hyd	Own	S-55		
Willys Knight.....	124	33x5.7	No	Own	"6"	6-3½x5½	25.35	X	A	7	PC	Til	A-L	D-Own	Own	M-Mec	½ Own	5.11	B-F	E-R	Mec	Own	S-57½		

## TAXICABS

Checker.....	117	33x4½	No	Buda	WTU	4-3½x5½	22.50	L	C	3	PC	Zen	Sci	Wes	D-Ful	Ful	Blo	¾ Col	4.87	E-R	I-R	None	Jon	S-57½	
Driggs.....	108½	30x3½	No	Own	.....	4-2½x4½	11.03	L	C	....	PS	Zen	Bos	Bos	D-Ful	Ful	Spi	¾ Own	4.74	E-R	I-R	None	Own	8-	
Elcar.....	.4	112	31x4	Yes*	Lyco	CF	4-3½x5	21.03	L	A	5	PC	Zen	A-L	P-B&B	W-G	M-Mec	½ Sal	4.75	E-R	E-T	Mec*	Ros	S-51	
Elcar.....	.6	118	32x4	Yes*	Cont	8R	6-3½x4½	27.34	L	C	4	PC	Str	Del	P-B&B	W-G	Spi	¾ Sal	4.75	E-R	I-R	Mec*	Ros	S-53	
H.C.S.....	110	29x4½	No	Wauk	.....	.....	.....	L	A	5	PC	Str	.....	.....	P-	W-M	W-M	.....	.....	I-R	E-T	.....	.....	Ros	S-
Kelsey.....	E	112	32x4	No	Lyco	CH	4-3½x5½	19.60	L	A	5	PC	Zen	Bos	P-B&B	W-M	M-Spi	¾ Sal	5.10	E-R	I-R	None	Lav	S-55	
Luxor.....	"Lux"	118	33x4½	No	Buda	WTU	6-3½x5½	22.50	.....	.....	.....	.....	.....	.....	D-Ful	Ful	M-Spi	½ Col	.....	.....	.....	.....	None	S-54½	
Pennant.....	115	33x4½	No	Buda	WTU	4-3½x5½	22.50	L	B	3	PC	Zen	Bos	Wes	D-Ful	Ful	Blo	¾ Col	4.87	E-R	I-R	None	Jon	S-57	
Premier.....	4A	118	33x4½	No	Buda	WTU	4-3½x5½	22.50	L	B	3	PC	Zen	Bos	D-Ful	Ful	Blo	¾ Col	4.70	E-R	I-R	None	None	S-57½	
Rauch & Lang.....	T	112	32x4	No	Buda	WTU	4-3½x5½	22.50	L	C	3	Sp	Zen	Bos	Dynf	D-Dtl	Det	Spi	½ Sta	5.10	E-R	E-T	None	Gen	S-50½
Rauch & Lang**	102	33x4½	No	Own	.....	Electric	.....	.....	.....	.....	.....	.....	.....	.....	None	None	Own	8.60	.....	.....	.....	.....	None	S-	
Reo.....	113	32x4½	Yes*	Own	T-6	6-3½x5	24.30	G	A	4	PS	Sch	N-E	D-Own	Own	Own	½ Own	4.70	E-R	I-R	None	Own	S-54		
Traveler.....	109½	32x4	No	Buda	WTU	4-3½x5½	22.50	L	B	3	PC	Zen	Eis	D-Dtl	W-M	Spi	Col	.....	E-R	I-R	None	Gen	S-		
White.....	15A	119	34x4½	No	Own	GK	4-3½x5½	22.50	L	C	3	Sp	Zen	Opt	D-Own	Own	Own	½ Own	5.36	E-R	I-R	None	Own	J-	
Willys Knight.....	A.B.C.	118	32x4½	Yes*	Own	64	4-3½x5½	21.03	X	C	3	PS	Til	A-L	D-Own	Own	Own	3½ Tim	5.12	E-R	I-R	None	Own	S-55	
Yellow.....	O-4	109	32x4½	No	Cont	V7																			

# WHICH PIECE OF PIE DO YOU WANT?



## Strange but True!

WHY is it? You can select at random many four garage men in any community. It's dollars to doughnuts you will find that one of those men is doing three times as much business as the other three put together. In other words, statistics prove that one garage man is a dyed in the wool go getter, while the other three are content just to jog along.

It looks as if the pie in the garage business is being divided four ways. Only, there is a big difference in the size of the pieces. The biggest helping goes to the man who helps himself.

But if you are really looking for the Lion's Share of the trade in your neighborhood the Thermodoid Organization can help you to help yourself.

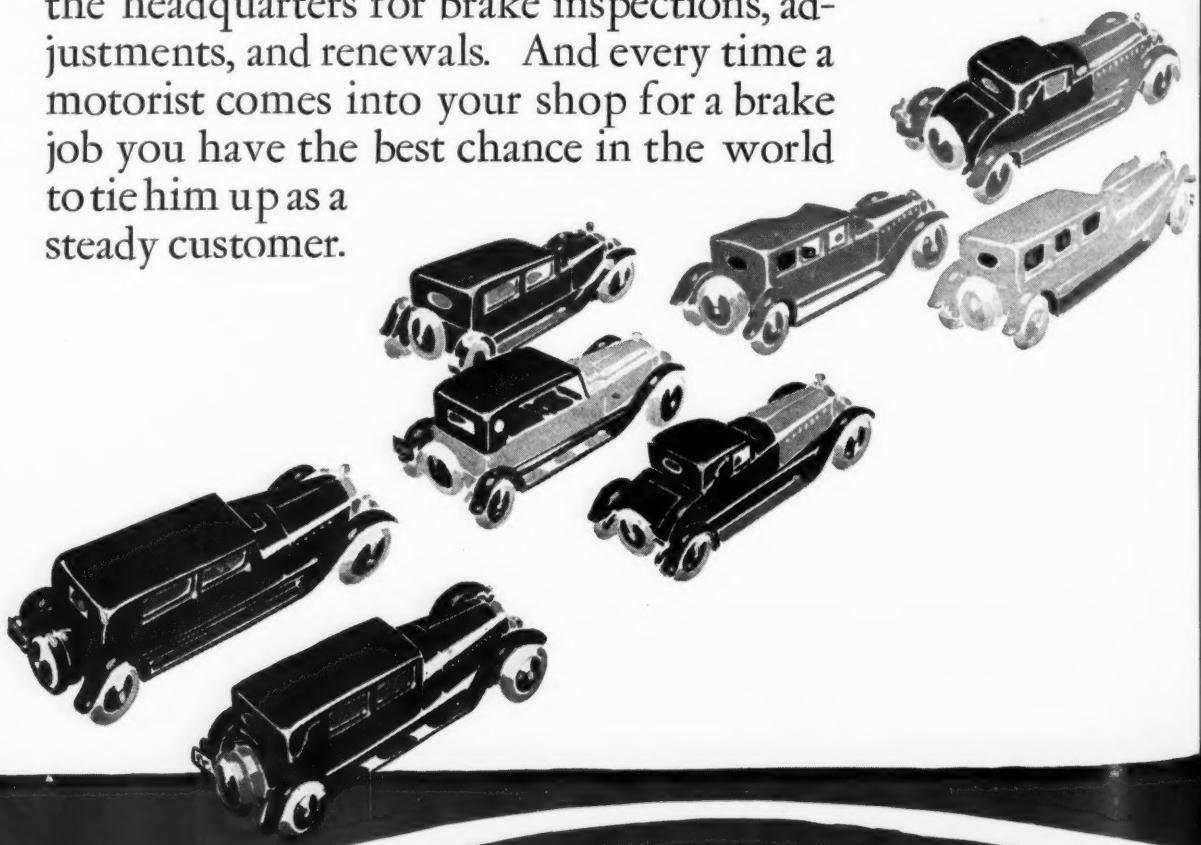
LET  
**Thermodoid**  
**Help You to the**  
**LION'S SHARE**

# The Thermoid Service Station Attracts Trade and HOLDS IT

MERELY tacking up a Thermoid Service Sign on your shop won't put you on the road to a big success in the garage business. But making your shop an honest-to-goodness Thermoid Service Station will bring you not only a greatly increased brake lining business, but other trade as well.

You know how the car owner always prefers to have his repairs made at a service station rather than a general shop. He feels he gets specialized, expert work.

Make your shop a Thermoid Service Station and you make it the headquarters for brake inspections, adjustments, and renewals. And every time a motorist comes into your shop for a brake job you have the best chance in the world to tie him up as a steady customer.



# Thermoid

Thermoid  
Brake Lining  
Service

BUT the Thermoid Service Station need not depend on the individual car owner alone. There is nothing to prevent you from installing a specialized brake department to take over the brake lining jobs of other garage men and fleet owners at "wholesale rates."

The Thermoid Company places at your disposal a complete Co-operative Service, which assists you in developing your brake lining trade so that in time it may well become the biggest and most profitable end of your business.

This Co-operative Service is described on the next page.

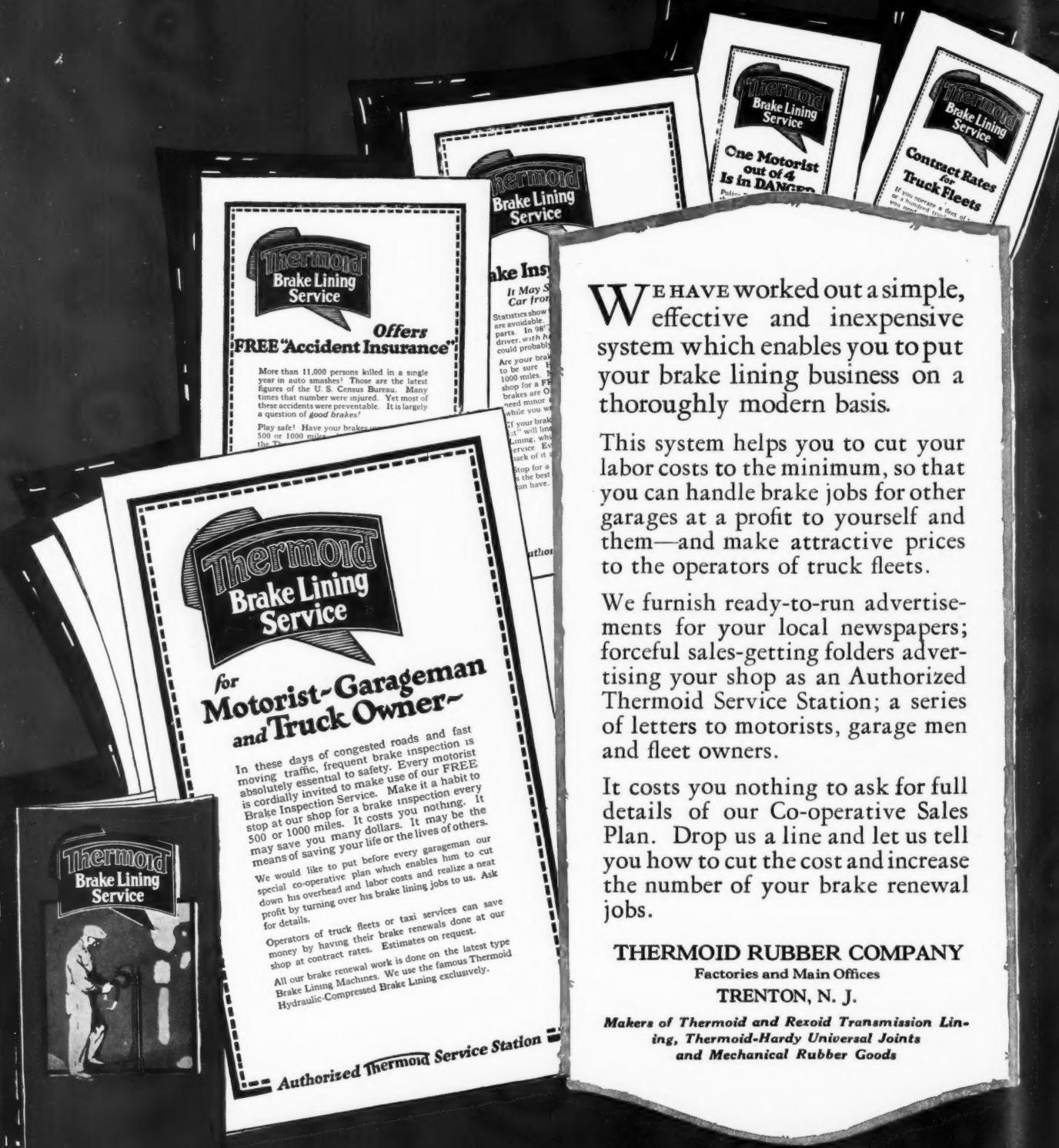
It's worth your while to read about it!

THERMOID RUBBER COMPANY  
Factories and Main Offices, TRENTON, N. J.

*Makers of Thermoid and Rexoid Transmission Lining, Thermoid-Hardy Universal Joints and Mechanical Rubber Goods*

**Hydraulic  
Compressed Brake Lining**  
**"For Short Stops and Long Service"**

# How Thermoid Sells You to Your Own Home Town



WE HAVE worked out a simple, effective and inexpensive system which enables you to put your brake lining business on a thoroughly modern basis.

This system helps you to cut your labor costs to the minimum, so that you can handle brake jobs for other garages at a profit to yourself and them—and make attractive prices to the operators of truck fleets.

We furnish ready-to-run advertisements for your local newspapers; forceful sales-getting folders advertising your shop as an Authorized Thermoid Service Station; a series of letters to motorists, garage men and fleet owners.

It costs you nothing to ask for full details of our Co-operative Sales Plan. Drop us a line and let us tell you how to cut the cost and increase the number of your brake renewal jobs.

**THERMOID RUBBER COMPANY**  
Factories and Main Offices  
TRENTON, N. J.

Makers of Thermoid and Rexoid Transmission Lining, Thermoid-Hardy Universal Joints and Mechanical Rubber Goods

# Thermoid Hydraulic Company Brake Lining

For Short Stops and Long Service

# Saving floor space with Lupton Auto Parts Systems

OVER 8000 Ford dealers have proven that Lupton Auto Parts Systems make a great saving in floor space.

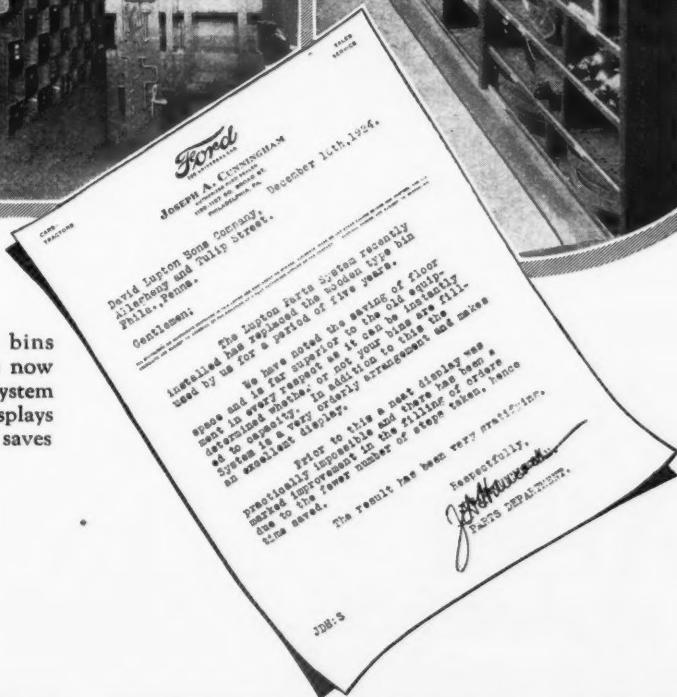
Joseph A. Cunningham, Ford dealer in Philadelphia, has had this experience, as he writes in the letter below.



THESE views show the LAPS System now installed in Cunningham's, giving better parts display and better service to customers.



The old wooden bins pictured above are now replaced by LAPS System of steel, which displays the parts well and saves time filling orders.



Joseph A. Cunningham says in the letter opposite:

"We have noted the saving of floor space. LAPS is far superior to the old equipment in every respect, as we can determine instantly whether or not the bins are filled to capacity."

"In addition to this, the LAPS System is a very orderly arrangement and makes an excellent display."

"There has been a marked improvement in the filling of orders, due to the fewer number of steps taken, hence time saved."

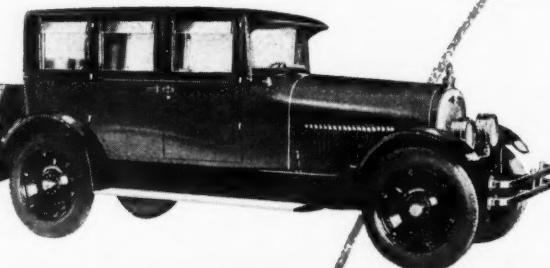
**DAVID LUPTON'S SONS COMPANY**  
Main office and factory—Philadelphia  
SALES OFFICE 2631 Woodward Ave., DETROIT

# When the DEAN of the World's Greatest Industry says —



"In 1893 we set out to build AN Automobile that would run. We succeeded. Yearly we advanced our objective--to build The BEST Car That Runs. That is always the guiding principle of this organization. I can say in all sincerity that I believe these new automobiles are the finest we have produced in all our 32 years. I have tested every part and unit in their construction and have approved them as worthy of Apperson tradition for Quality and Service."

*E.L. Apperson*



**D**EALERS and owners of good cars everywhere recognize that Edgar Apperson's approval of an automobile means Quality, Value, Performance and uninterrupted Service. That's why Apperson owners invariably buy "another Apperson." It means that Apperson Cars are COMPLETE in every detail--that they represent the finest engineering achievements of Apperson's thirty-three year leadership in motor car development and improvement.

It means that Here is a car of Proved Performance backed by Apperson's sustained reputation for building "Better Automobiles." Apperson Sixes and Eights have MORE EXCLUSIVE FEATURES for Safety, Comfort and Ease of Control than Any Other Automobile in the world. That means quick and easy selling.

Every Apperson Merchant, when he unloads his cars, KNOWS they are complete,—ready for the road.

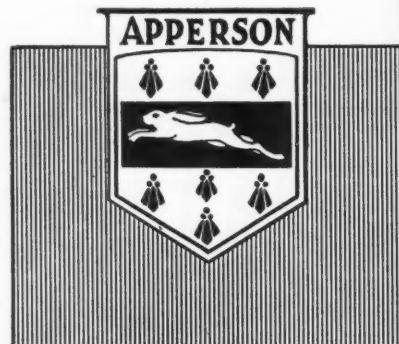
With the New STRAIGHT-AWAY EIGHT and the SUPER-VALUE SIX, the APPERSON line for 1925 is today's best opportunity for aggressive and enterprising dealers.



Write, Wire or Come to Kokomo for  
Details on the APPERSON Positive  
Profit Merchandising Plan.

**APPERSON**  
*Jack Rabbit*

APPERSON AUTOMOBILE COMPANY, KOKOMO, IND.



# ★ *Here is the APPERSON Positive Profit Merchandising Plan*

A Fair and Friendly Method of Putting the Dealer's Business on a Profitable Basis--and Keeping It There.

**D**OZENS of dealers ask us about it every day. We tell them all the same thing. "It's the Surest System for Making Money in Retailing Automobiles that we could devise."

It stands out as the greatest opportunity in the industry. Here are some of the outstanding reasons:

A Sales Agreement--  
No Contracts.

No Sales Quotas

A Famous Name

Strong Finances

Known Demand

Specialized Sales Assistance and the Apperson Local Advertising Agreement

A Complete Line That Holds Sales Prospects--Eight body styles--two chassis models within a \$1,000 range.

More Exclusive Mechanical Refinements Than ANY OTHER CAR.

Thousands of Satisfied Owners

Proved performance

Centralized Service

Complete Cooperation

Superior Quality-Value

Balance that against anything else in the industry. It won't take long to see the advantages in it for you. Dealers must have four things: 1.—Definite Quality in their product. 2.—A liberal margin of Net Profit. 3.—Complete cooperation on Service and Sales. 4.—Freedom in handling their own business. Apperson gives you these things 100%. Every member of the Apperson Sales Organization has been a Dealer and knows what the Dealer needs.

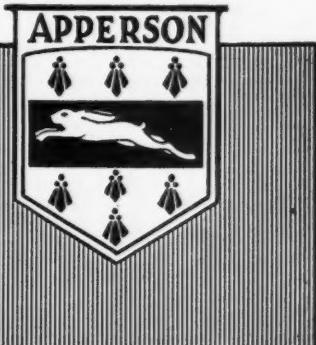
It's certainly too big an opportunity to overlook. Tell us where you are and what you want. We'll send a definite plan for your territory.

# APPERSON

• *Jack Rabbit*

APPERSON AUTOMOBILE COMPANY, KOKOMO, IND.

Keep this in mind:  
The Apperson representative is not just a dealer, he is a business man, and he is everywhere a successful businessman.



HEAT-SHAPED TO INSURE  
PERFECT ROUNDNESS



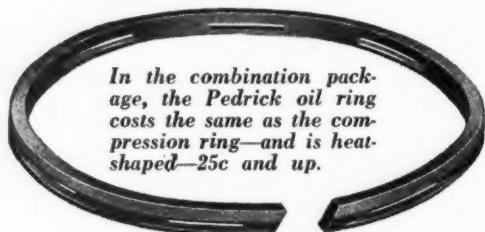
In line with our policy of helping Pedrick distributors move their stocks, we have just issued a new folder:

### **"How to make your motor pull like new"**

It is brief. Factful. Interesting. It tells the motorist the things you would tell him if you had time. It emphasizes the merits of heat - shaping as the only way to keep rings round. It mentions your name, but not ours—the motorist

thus goes back to you when he wants to know more about rings and whether he needs them. The folder is not technical, but is good reading. Write to Dept. 17 for

an advance copy, and details of Pedrick's new merchandising proposition.

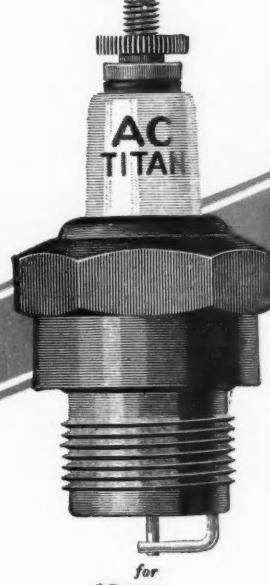


*In the combination package, the Pedrick oil ring costs the same as the compression ring—and is heat-shaped—25c and up.*

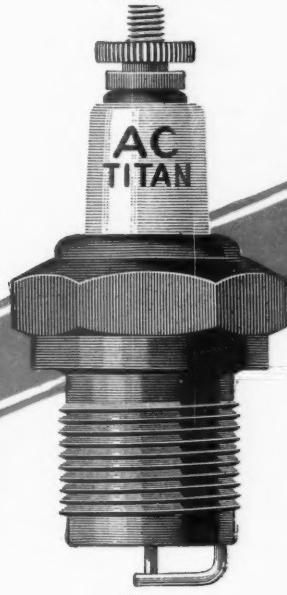
**Wilkening Manufacturing Co.**  
Philadelphia

*More than 85% of the American cars and trucks produced, Fords excluded, are AC-equipped*

## The 6 Big-Selling Types of AC Spark Plugs

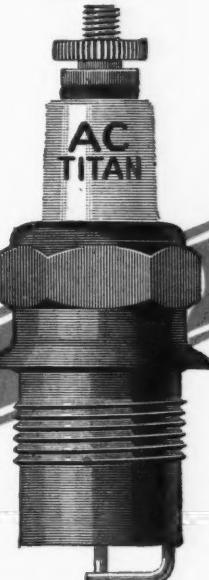
**5/8" REGULAR**

for  
\*Cadillac  
\*Flint  
\*Hupmobile  
\*Maxwell  
\*Star  
200 Others

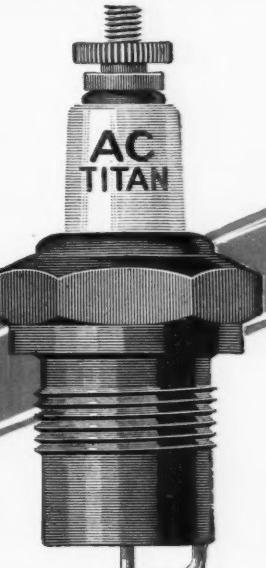
**5/8" D TYPE**

for  
\*Dodge Brothers  
\*Chandler  
\*Hanson Rickenbacher  
\*Westcott

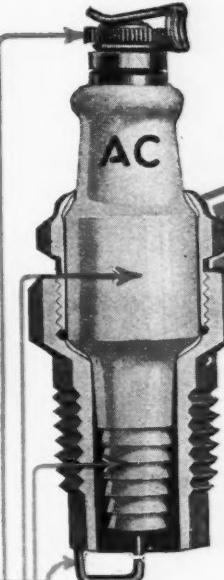
\*Factory Equipment  
With Carbon-proof Porcelain

**SAE LONG**

for  
\*Buick  
\*Nash  
\*Oldsmobile Six  
\*Durant Four  
\*Oakland (to 1924)

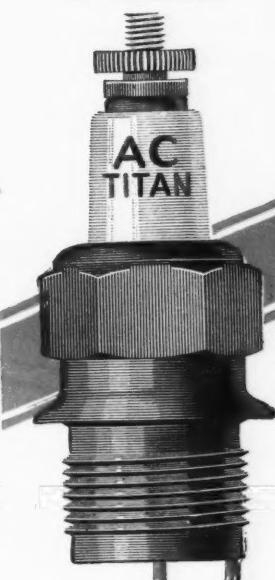
**5/8" LONG**

for  
\*Chevrolet  
\*Oakland  
\*Buick (to 1924)  
\*Kissel Stephens

**AC 1075 for FORDS**

Drip Electrode  
Forms Natural Oil Drain

High Temperature  
Fins. Patented Car-  
bon-proof Porcelain  
Heavy Body  
Porcelain  
Spring Terminal  
Clip

**SAE REGULAR**

for  
Studebaker  
\*Durant Six  
\*Marmon  
\*Stearns-Knight  
Stutz

**DEALERS** who have a good assortment of AC Spark Plugs can build a profitable business.

The demand is assured as each type has its own following, due to car equipment.

### OTHER SIZES OF AC SPARK PLUGS

**REGULAR METRIC**

for  
\*Hudson  
\*Essex  
Duesenberg  
\*Wills-Sainte-  
Claire

**SAE EXTRA LONG**

for  
\*Dort Six  
\*Apperson Six  
\*McFarlan  
Elgin

**1/2" CARBON-PROOF**

for  
Overland  
Reo  
\*Factory Equipment  
With Carbon-proof Porcelain

**5/8" LONG BODY**

for  
\*Chandler (to 1924)  
Willys-Knight

AC-SPHINX  
Birmingham  
**ENGLAND**

**AC Spark Plug Company, FLINT, Michigan**

Makers of AC Spark Plugs—AC Speedometers

U. S. Pat. No. 1,135,727, April 13, 1915; U. S. Pat. No. 1,216,139, Feb. 13, 1917. Other Patents Pending

AC-OLEO  
Levallois-Perret  
**FRANCE**



THE New BULL Dog Three-in-One Carburetor Control is making rapid strides in sales to Ford Owners everywhere. For the first time complete control of the Ford Carburetor is possible from the dash of the car. It primes, adjusts, stays put. Three things every Ford driver wants. Fits all Fords.

*Sells for \$1.50*

THE W. H. THOMAS MFG. CO., SPENCER, IOWA

# The Trade Is Back In

Cushers have put the trade back strong on spring recoil controls.

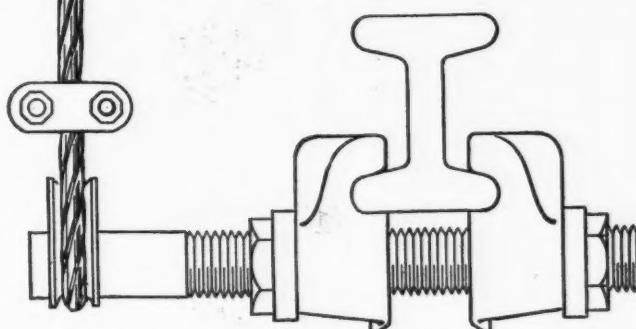
Cushers have brought balloon tires as well as high pressure tires under perfect control. Cusher *flash action* does it—hair trigger response to spring motion on any car. And no interference with smooth riding on smooth roads!

Cushers have made it possible to fit every drilled frame, although stocking only one size, because Cusher automatic regulation is better than any variety of sizes.

Cushers have killed the service requirement, since nothing on Cushers normally stretches or breaks, or loses its original adjustment.

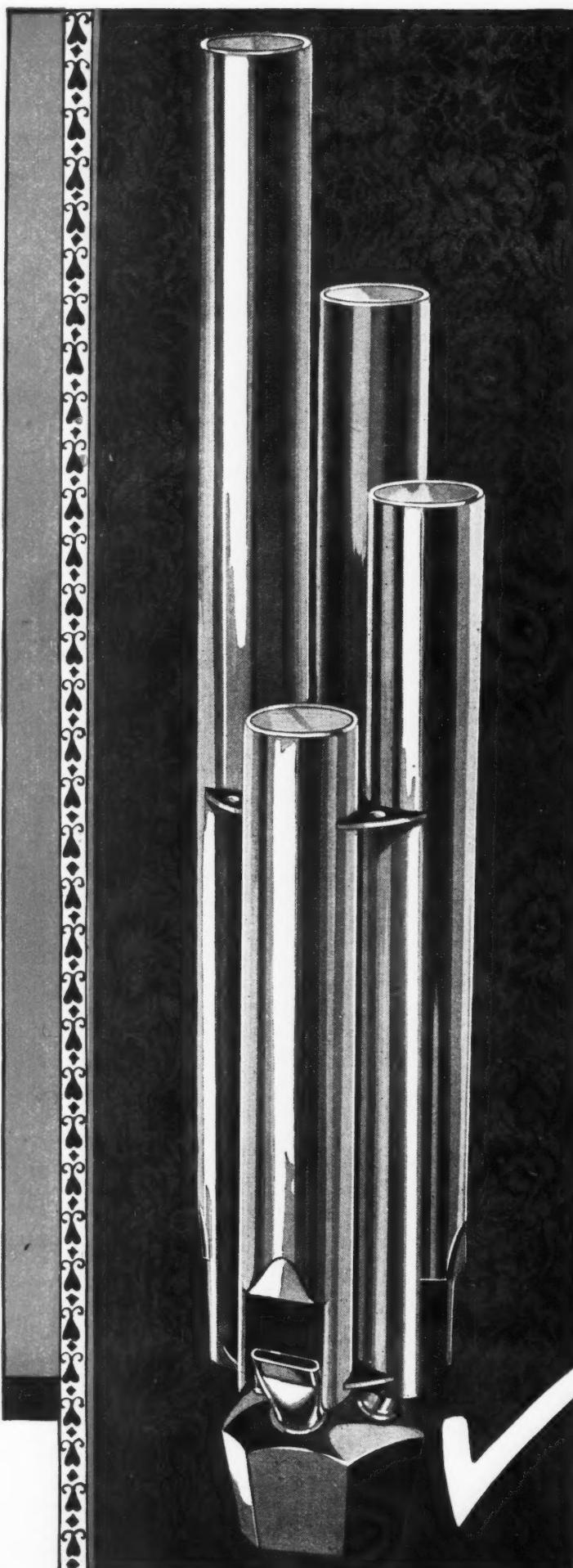
Cushers are the matured product of a big, resourceful specialty organization which is *seeing the trade through* on Cushers.

**CHICAGO ROLLER SKATE CO.**  
Manufacturers of Screw Machine and Automotive Products  
Cushers Sales Dep't, Fulton-Dean Co.  
332 South Michigan Avenue, Chicago



**C u s h e r e**





The **AERMORE**  
TRADE MARK REG U.S. PAT OFF  
 Exhaust Horn  
*The Signal With a Smile*

## Why It Sells

First because it's *THE* Horn that opens the road. Its tone carries—reaches the ears of the driver ahead, and has a psychological effect because it is different.

It adds safety to country driving—and always works. A loud blast or a gentle warning, as desired.

Next, it adds distinction to any car. Its melodic organ-like tone is a signal with a smile.

National advertising in The Saturday Evening Post and other publications is telling these things to your customers. Aermore Horn Sales are growing greater each week. If you are not getting this business, write us or your jobber and ask about it.



The new Aermore Demonstrating Stand. Enables you to demonstrate the Aermore right in your store. Supplied without cost to dealers selling Aermore Horns. Ask your jobber—or write us.

**THE FULTON CO.**  
 738 - 75th Ave., Milwaukee, Wis.  
 Automotive Equipment  
 Pace Setters of Quality

## CLIP-SIGN and MAIL

THE FULTON CO., 738 75th Avenue, Milwaukee, Wisconsin  
 Please forward details of sales proposition on the complete Fulton line of

Automotive equipment—and cooperation you will render selling this line.

Name.....

Street No.....

Town..... Name of Your State &  
 Jobber..... State.....

# High Quality with Well Balanced Costs and Wide Profit Margins—

That is the Farran-oid proposition in a nutshell.

Quality comes first—every Farran-oid product has gained its present recognition among the trade by actual performance. It has proved its dependability.

The margin of profit on the Farran-oid line for both distributor and dealer is exceptionally good.

The completeness of the Farran-oid line simplifies stocking and insures quick turnover.

Every time you sell a Farran-oid product you create a permanent customer.

Leading jobbers are prepared to supply your needs on the whole line.

## FARRAN-OID FAN BELTS

Farran-oid Radiator Hose  
Farran-oid Garage Air Hose  
Farran-oid Blowout Patches  
Farran-oid Door Checks  
Farran-oid Car Washing Hose  
Farran-oid Tire Flaps  
Farran-oid Ford Floor Mats  
Farran-oid Tube Patches

THE FARRAN-OID COMPANY, Akron, Ohio

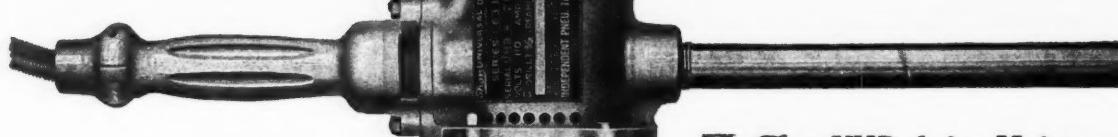
**Farran-oid**  
*Products*



## FOR BETTER WORK AND BETTER SERVICE USE BETTER TOOLS!



*Thor*



Look under the brush cover in a Thor Electric Drill. See the commutator, brushes, holders and connections in plain view.

Easily accessible for inspection.

Note the durable, simple and effective arrangement of the brush holder assembly, its insulation, mounting and spacing.

Geared for excess power. Friction, wear and heating are reduced to a minimum by selected ball and roller bearings, and the Thor angular vent.

It is built for the man who knows that the best drill costs less in the long run.

64 sizes and types—0 to 2 In.—a size and type for every purpose. Order through your dealer or direct from us. Accept no substitute. We have an office near you.

*Write for new catalog—"Thor Electric Drills". It is yours for the asking.*

### INDEPENDENT PNEUMATIC TOOL COMPANY

**EASTERN OFFICE**  
1463 Broadway  
(at 42nd St.)  
New York, N. Y.

**GENERAL OFFICES**  
600 West Jackson  
Blvd., Chicago, Ill.

**LONDON OFFICE**  
No. 40 Broadway  
Westminster,  
LONDON, S. W. 1.  
ENGLAND

**BRANCH OFFICES**  
1721 The Age-Herald  
Bldg., Birmingham, Ala.  
1178 Union Trust Bldg.,  
Cleveland, Ohio  
32 Front St.,  
West Toronto, Ont.

512 Denckla Bldg.,  
Philadelphia, Pa.  
518 Garfield Bldg.,  
Detroit, Mich.  
718 Bessemer Bldg.,  
Pittsburgh, Pa.  
61 Fremont St.,  
San Francisco, Cal.



*Thor UKC 3/16 in. with grip switch handle—Weighs only 4 3/16 lbs. With cord and socket plug.*



*Thor UAC 1/4 in. with grip-switch handle, threaded spindle, Jacobs Chuck, cord and socket plug.*

FACTORY: State and Claim Streets, Aurora, Ill.



## A PROFITABLE LEADER

Many successful automobile dealers who became interested in the "Caterpillar" for occasional sales have realized the substantial profit to be made by enlarging their efforts and their "Caterpillar" sales facilities. The "Caterpillar" has not been merely an addition to their line; it has proved a most valuable leader. Many of these dealers are selling large numbers of "Caterpillars" today and commanding a continuous year 'round profit.

The "Caterpillar" is "The Nation's Roadmaker." Public officials, contractors, municipal and park board authorities, automobile clubs, civic organizations and good roads enthusiasts are everywhere discussing and interested in *exactly the things which the "Caterpillar" Tractor accomplishes*. It is not only indispensable in the construction of hard surface roads, but is equally indispensable for grading and maintaining even greater mileages of dirt and gravel roads. Every

automobile owner knows the importance of keeping all the roads good and thus avoiding the inconvenience of detours due to washed out or impassable sections.

Thousands of miles of roads have been built and maintained by "Caterpillar" Tractors; but in every community there are great mileages of additional roads to be built, and unpaved roads to be maintained. Every community needs "Caterpillars." If they have one or more now, additional tractors will undoubtedly be required. There is a size "Caterpillar" for every requirement; the 2-Ton for lighter jobs; the New 5-Ton for every medium power need; the 10-Ton for heavy duty.

The "Caterpillar" line offers real opportunities to successful and well established automobile dealers. Write us about territory.

*There is but one "Caterpillar"—Holt builds it*

THE HOLT MANUFACTURING COMPANY, Inc.

Peoria, Illinois

Stockton, Calif.

Export Division—250 W. 54th St., New York, N. Y.

**CATERPILLAR**

Reg.U.S.Pat.Off.

# You've got to have a Junk-Pile to give Real Service!

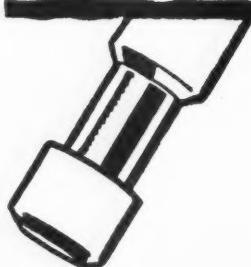


YOU'VE pulled the valves out of a lot of cars, and noticed the effects of various combinations of engine design, valve quality, and driver abuse. Few used valves are free from the tell-tale scars of punishment.

What do you do with valves that have seen their best days? The owner doesn't care anything about them, if new ones will give him *better* results. He won't insist on regrinding to the last feather-edge, if new ones will give him more *permanent* results.

Put the old valves on your junk-pile. Your customer wants the quick, responsive, reliable *power* that you can give him best with brand new Thompson Silcrome Valves. And you want him to say that he got *real service* in *your* shop.

You're absolutely certain of an enthusiastic customer when you put in Thompson Silcrome Valves. They're standard equipment in the very best cars and trucks made; the only valves that have ever been able to stand



# Thompson



the gaff successfully in airplanes, racing cars, and motor-cycles; and they show extraordinary resistance to burning heat, warping and wear.

Leading jobbers stock them for all makes and models of cars and trucks—regular stems and oversize. Don't order just "valves"—specify Thompson Silcrome Valves.

#### THOMPSON PRODUCTS, INC., CLEVELAND

Also Manufacturers of Tappets, King Bolts, Tie-Rod Bolts, Spring Bolts, Bushings and Starting Cranks

EXPORT DEPARTMENT: 130 West 42d St., New York, U. S. A.

CABLE ADDRESS: "THOMPRO—NEW YORK"



Thompson Silcrome Valves are used for original equipment by more than sixty of the leading builders of automobiles, trucks, tractors, airplanes and motor-cycles.

# Silcrome Valves

# Why?



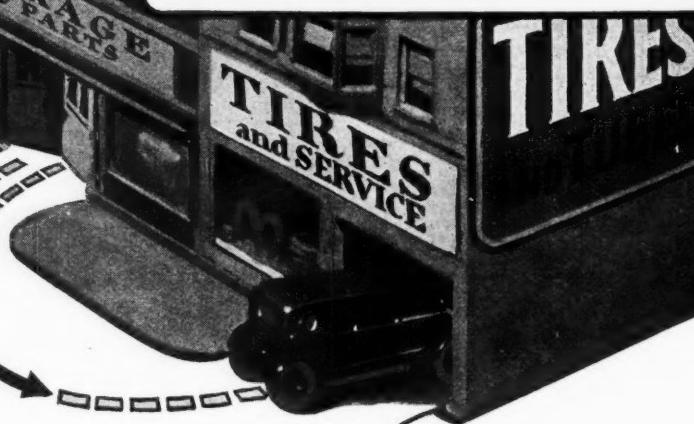
THE more accustomed motorists become to turning to you for high grade service of any nature, the better your hold on your present trade and the greater your chances for new business. Why should car owners buy cars at one place, motor service at another, and tires at a third, when a single establishment, with a single overhead, could do the whole job for them?

By adding a single man to your present force, you can establish a complete tire service department with which you can go after the tire business on a comprehensive scale. You can get, not only the business of your present trade, but that of car owners who do not now come to you for anything. You can build a name for completeness of service which will quickly establish your shop as the most progressive establishment in your community.

And with a single overhead and a single organization, you draw profits from three or four phases of the automobile business!

Car dealers and garage owners are today making easy profits from the sale of tires on which they have secured exclusive representation. You can do as much by establishing yourself as headquarters for a tire of recognized merit. If it has not already been done, some one in your community is going to do that as exclusive distributor for Lancaster Cord Tires.

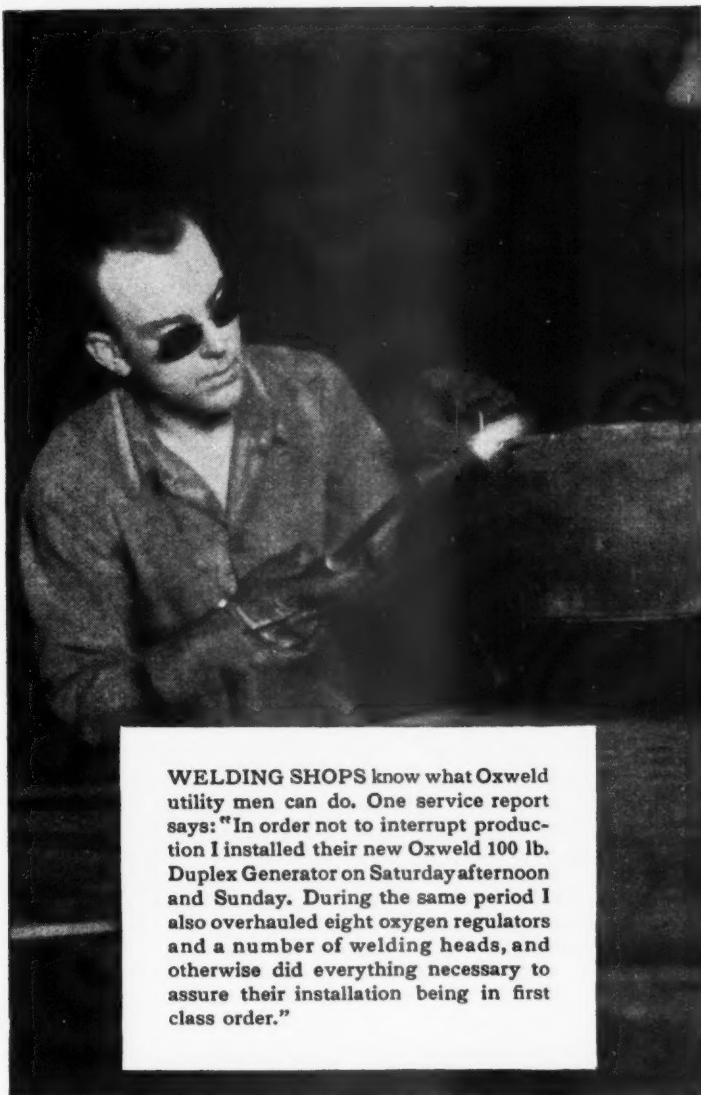
THE LANCASTER TIRE & RUBBER CO.  
COLUMBUS, OHIO



# LANCASTER CORD TIRES



# Why will you find our man in your plant?



WELDING SHOPS know what Oxweld utility men can do. One service report says: "In order not to interrupt production I installed their new Oxweld 100 lb. Duplex Generator on Saturday afternoon and Sunday. During the same period I also overhauled eight oxygen regulators and a number of welding heads, and otherwise did everything necessary to assure their installation being in first class order."

**THE PURCHASE** of Oxweld apparatus does not end with the delivery of the apparatus to you.

The Oxweld Acetylene Company considers it a part of its duty to help keep all Oxweld apparatus in proper condition and working efficiently.

It is also a part of Oxweld's duty to see that all Oxweld customers are informed of the best methods of welding and cutting, and that they are instructed in new processes discovered by the research laboratories.

The greater part of this obligation can be fulfilled only by personal visits to your plant. That is why some day you will find an Oxweld utility man in your plant.

He will be inspecting your apparatus, making minor repairs or adjustments, instructing or informing your operators on new methods, doing everything he can to help you obtain the fullest use of your Oxweld apparatus.

## Oxweld Acetylene Company

LONG ISLAND CITY, N.Y.  
Thompson Ave. & Orton St.

CHICAGO  
3642 Jasper Place

SAN FRANCISCO  
1050 Mission Street

# Oxweld

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## WELDING AND CUTTING APPARATUS

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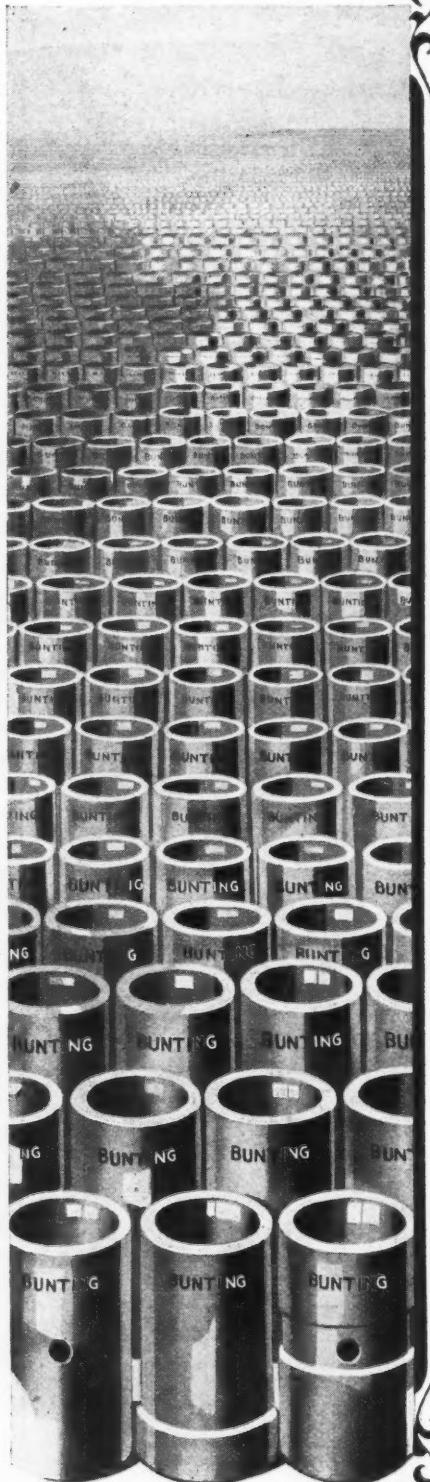
WORLD'S LARGEST MANUFACTURERS OF WELDING AND CUTTING EQUIPMENT

# BUNTING

**PHOSPHOR BRONZE**

# BUSHING BEARINGS

PATENTED



The one thing that millions of cars need most today is rebushing with Bunting Phosphor Bronze Bushing Bearings.

No other single line of service will put more solid, satisfaction-giving business into your shop.

Bunting Bushings are supplied to car dealers and service men by 180 leading jobbers and hundreds of service stations in the United States.

Ask your jobber for lists showing Bunting Replacement Bushing Bearings for Piston Pin, Spring Eye and Shackle Bolt, Steering Knuckle and Tie Rod assemblies, in all popular automotive vehicles.

**THE BUNTING BRASS & BRONZE CO.  
TOLEDO, OHIO**

*Branches and Warehouses at*

**NEW YORK**  
245 West 54th St.  
Columbus 7528

**CLEVELAND**  
710 St. Clair Ave., N.E.  
Main 5991

**CHICAGO**  
722 S. Michigan Ave.  
Wabash 9153

**PHILADELPHIA**  
1330 Arch St.  
Spruce 5296

**SAN FRANCISCO**  
198 Second St.  
Douglas 6245

**BOSTON**  
36 Oliver St.  
Main 8488



"We make so many  
because so many want  
so many."

*Baby Bunting*

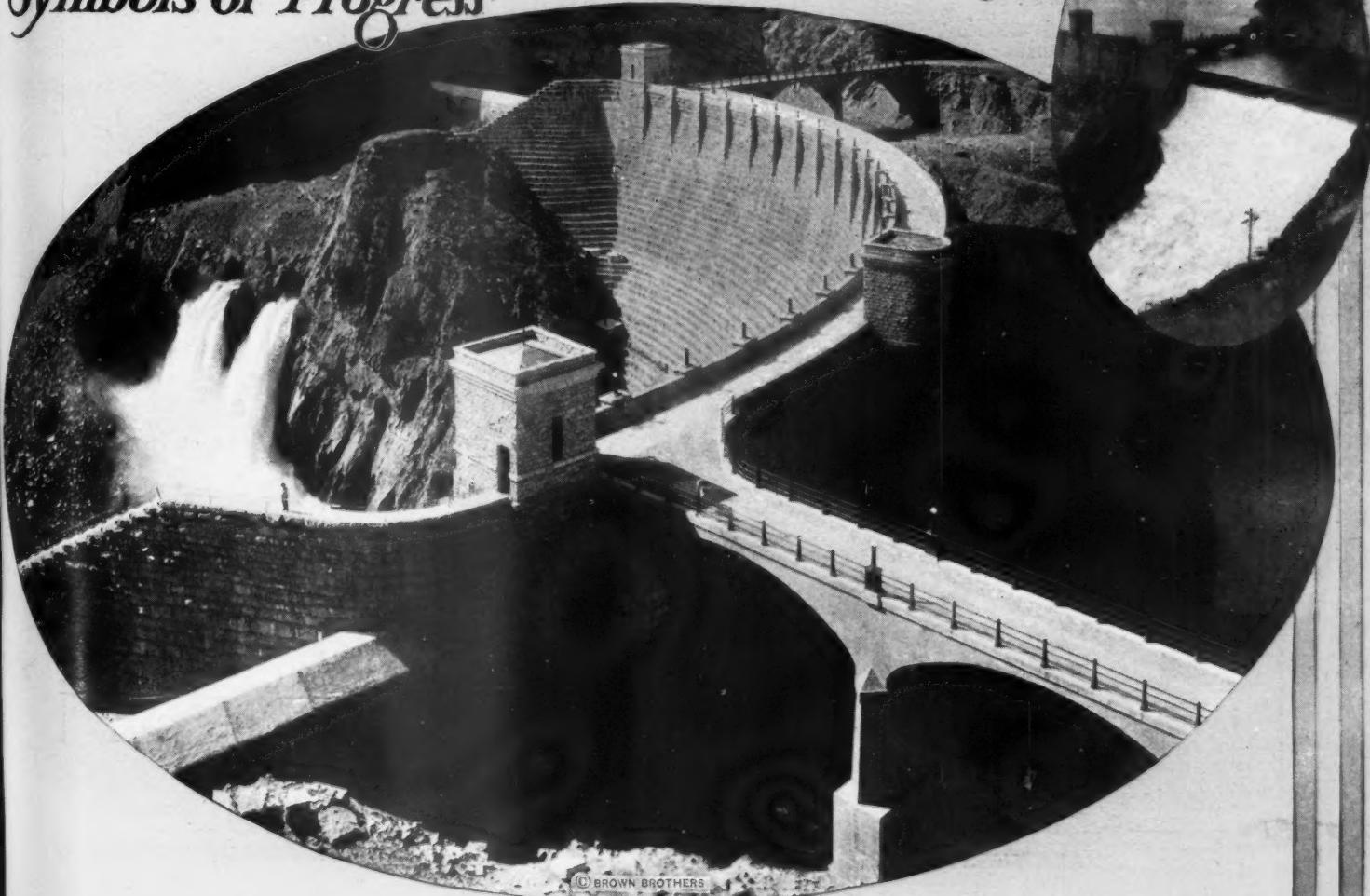


# The Roosevelt Dam

This great dam is the keystone of a gigantic irrigation system that has turned 240,000 acres of Arizona desert into a luxuriant garden spot—an engineering achievement that was made possible only by modern skill and equipment.

At first glance it seems a wide jump from this famous dam to the Jacobs Chuck—but they're both examples of the best in their line. Wherever engineering skill makes power available for mechanical use Jacobs Chucks are to be found holding the tools for some important operation. Wherever portable electric or pneumatic tools are used—and they're used everywhere on every kind of construction work—you'll find Jacobs Chucks, because of their unusual strength and efficiency. Wherever there are machines built that call for chucks to hold the tools you'll find Jacobs the first choice.

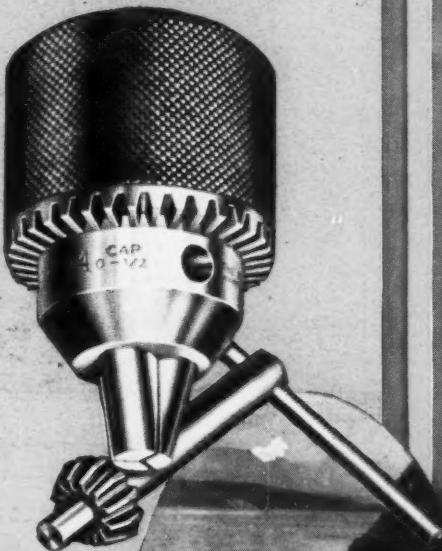
## Symbols of Progress



© BROWN BROTHERS



The Jacobs is the original Toothed Sleeve and Key Chuck. It takes drills, taps or other tools, centers them accurately, grips them securely and holds positively until you are ready to release them. It is easily and quickly operated with one hand.





This combined Electric Drill and Valve Grinder is made by the Louisville Electric Mfg. Co., Louisville, Ky.

## Many other Jobs for an Electric Drill *—besides drilling Holes!*

Besides hundreds of installation and repair jobs where good clean holes are needed in a hurry, the Electric Drill is now being profitably used for driving grinding stones, burnishing tools, cylinder reboring tools, and reaming tools. It is used to drill out broken bolts, rivets, screws, studs, grease cups, oilers, nipples, elbows,

etc. Invaluable, too, for removing seized spark plugs, valve caps, plungers and valve stems.

Special attachments such as valve grinders, socket wrenches, carbon cleaning brushes, etc.—are making the Electric Drill more and more valuable to the Repairman—and a still greater source of profit for the Service Shop.

---

**THE JACOBS MANUFACTURING COMPANY**  
HARTFORD, CONN., U. S. A.

The World's Largest Producers of Drill Chucks

---

## AN INTRODUCTION TO THE AUTOMOTIVE INDUSTRY



## Now for the Sales Possibilities

### THE LUBURETOR

The Luburetor is a vacuum controlled lubricating device which provides adequate lubrication for the upper end of the engine, cylinder walls, valves, pistons, and piston rings. A compensating valve of the rugged piston type, which is controlled by vacuum, accurately regulates the oil field to correspond with engine load and speed. The far-reaching benefits are reflected in increased motor life and economical service, reducing to an absolute minimum most of the common repair and maintenance operations, valve grinding, replacement of piston rings, reborning of cylinders and overfrequent changing of crank case oil.

DEFINITE recognition of the tremendous sales possibilities of the Luburetor is shown in the multitude of inquiries received from distributors, dealers and engineers from all sections of the United States and from nearly every foreign country. These inquiries are the direct result of Luburetor advertising, aided by liberal publicity in the automotive press, which has been appearing during the past several months. This general acceptance by the entire trade presages a remarkable sale for the Luburetor, limited only by the number of cars, trucks and tractors manufactured, sold and in operation.

A complete description of the Luburetor and sales policy will be sent upon request to Distributors and dealers who can see its sales possibilities and who are planning to make the most of the approaching spring and summer selling season. An attractive retail price appeals to the car or fleet owner—the Luburetor is non-competitive—one model fits practically every type and size of motor—this requires only a limited investment in a small, compact stock—quick turnover and a neat profit on every sale makes the Luburetor dealership a money maker.

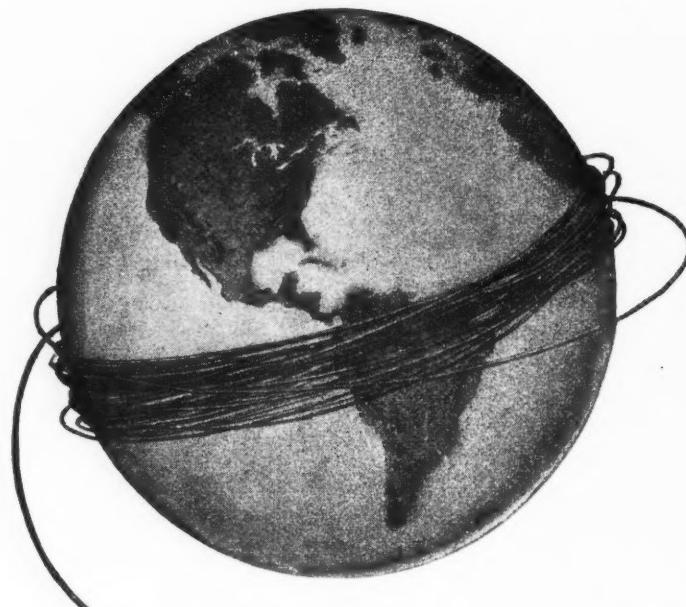
*March and April will start the spring selling season. Get in line now with the Luburetor National Distributing Organization. A telegram or letter will bring complete information by return mail. Ask for Folder Number 10-L.*

THE LUBURETOR COMPANY, 471 East Broad Street, Columbus, Ohio

*The Luburetor*  
TRADE MARK REG.

FOR ALL PASSENGER CARS, TRUCKS AND TRACTORS

## FACTS ABOUT A FAMOUS FAMILY



How much is a million miles of wire, you ask? It would go 40 times around the globe; or more than 300 times between New York and San Francisco.

## 1,000,000 miles of wire

In a single year General Motors uses over 1,000,000 miles of insulated copper wire in the manufacture of Delco and Remy starting, lighting and ignition systems—standard equipment on more than 30 makes of trustworthy cars and trucks.

Wire is one of many materials which General Motors buys in quantity. Such large purchases contribute to the prosperity of many businesses and are a real factor in the economical manufacture of the products of General Motors.

# GENERAL MOTORS

BUICK · CADILLAC · CHEVROLET · OAKLAND  
OLDSMOBILE · GMC TRUCKS

General Motors cars, trucks and Delco-Light products may be purchased on the GMAC Payment Plan.  
Insurance service is furnished by General Exchange Corporation



## STICKS OUT!

Merchandise displayed in the SHERER Accessory Display Case sticks out! It arrests the eye, prods the desire for possession, and clinches the sale.

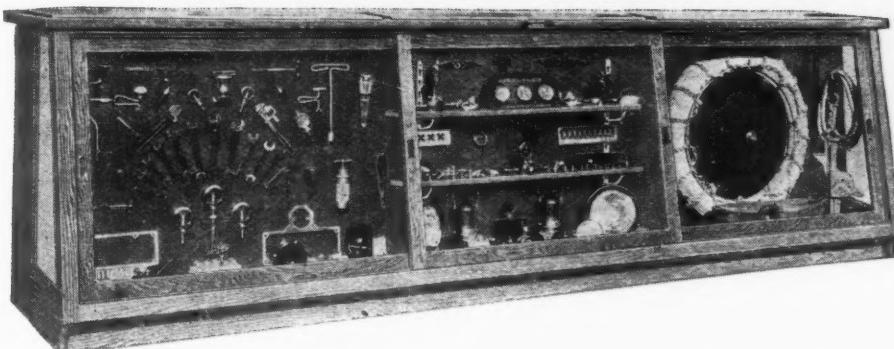
SHERER equipment furnishes ample display space plus generous storage room for surplus stock. It multiplies turnover, makes service faster, keeps stock fresh and clean, and gives the store a snappy appearance.

SHERER Cases are paying investments and installed only where they *will* prove profitable.

The SHERER Retail Advisory Bureau studies your problem thoroughly. A staff man consults with you and renders worthwhile service with a view of increasing your business and decreasing your costs. *After* this has been done the advisability of installing SHERER equipment is determined.

Write for literature, or state when you can consult with a Retail Display Advisor.

**SHERER-GILLETT COMPANY, 17th and S. Clark Sts., CHICAGO**



**S H E R E R**  
DISPLAY EQUIPMENT

The image displays five window cards for Crescent Tools, arranged in a staggered fashion. The top card features a boy working on a car with a wrench, with the text: "Dad says there's nothing like a ~ CRESCENT™ WRENCH for tuning up the car". The second card from the top shows a wrench being used on a car wheel, with the text: "Keep 'em tight with a CRESCENT WRENCH 8 inch size 95 cents". The third card from the top is titled "For household use - hang them in the kitchen" and shows a wrench and screwdriver hanging from hooks, with prices: 8 in. wrench 95¢, 4 in. screw driver 65¢, 6 in. pliers 50¢. The fourth card from the top shows a hand holding a thin-nose plier, with the text: "A handy pocket plier! the CRESCENT TOOL COMPANY 'Thin-nose' 50¢". The bottom card shows a wrench and screwdriver in a kit, with the text: "Do all Your Overhauling with a CRESCENT-KIT \$2.35". Each card has a small "Reversed" label at the bottom left.

**"Dad says there's nothing like a ~ CRESCENT™ WRENCH for tuning up the car"**

**Keep 'em tight with a CRESCENT WRENCH**  
8 inch size 95 cents

**For household use - hang them in the kitchen**

8 in. wrench 95¢    4 in. screw driver 65¢    6 in. pliers 50¢

**CRESCE**  
TOOL COMPANY  
**TOOLS**

**A handy pocket plier!**

the  
**CRESCE**  
TOOL COMPANY  
**'Thin-nose'** 50¢

**Do all Your Overhauling with a CRESCENT-KIT \$2.35**

**Reversed**

**CRESCE**  
**TOOLS**

## More Spring business for accessory dealers—

The tools demanded for spring overhauling on cars and farm implements, or about the house will in many cases be purchased from accessory dealers—provided tool-buyers are given proper and timely hints. These handsome window cards are as attractive in the small window as in the large one. They are the right size, shape, and style to harmonize with other material. A novel "two-in-one" feature enables you to change displays quickly. This set, as shown, is supplied without charge to all dealers handling Crescent Tools. Ask your jobber or write us.

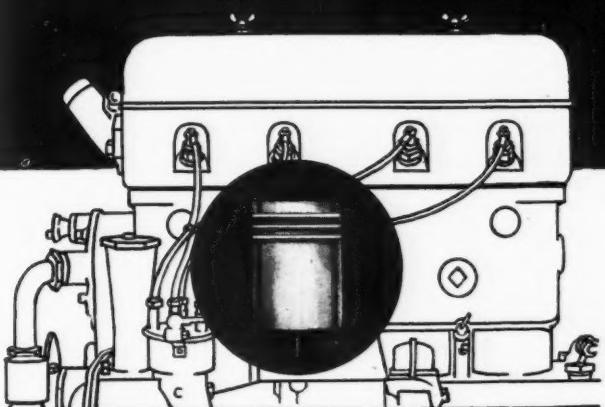
**CRESCE**  
**TOOL COMPANY**

208 Harrison St., Jamestown, N. Y.

*Originators of the Crescent Wrench*

# Inevitable

The increased speed  
and greater compression  
of gasoline motors  
demand a more  
efficient piston ring

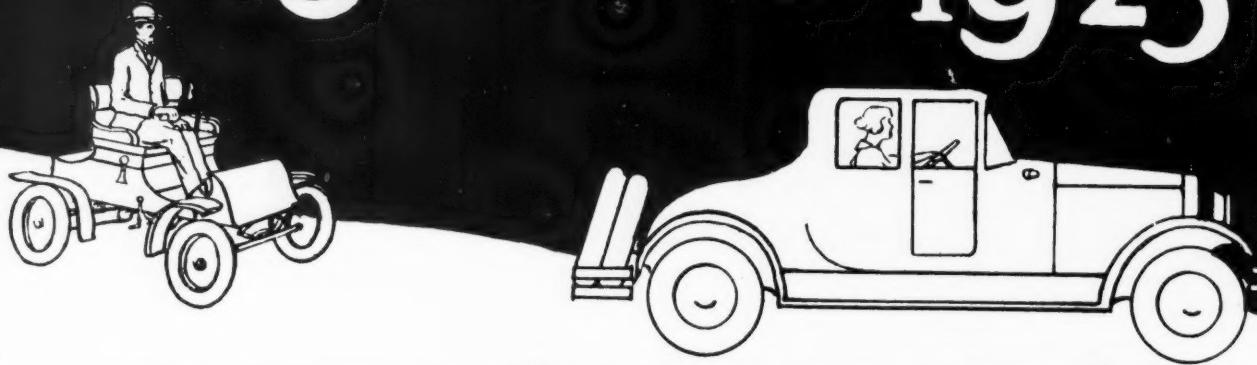


## Bronzed Piston Rings

# The greatest advance in piston rings

from

1900 — to 1925



## to meet the demands for increased efficiency in motors

WHEN the automobile first came into existence it borrowed many parts from the steam engine. Among them was the cast-iron piston ring.

From time to time, this ring has been improved. But until today, no ring had made its appearance which was adapted especially to present-day efficient motors. In a word, the ideal piston ring should:

1. Be made of a good bearing metal.
2. Practically eliminate cylinder wear.
3. Maintain its tension under extreme heat.

4. Conduct heat from the piston to cylinder wall.
5. Make special oil rings unnecessary.
6. Do away with breakage and scores.

Bronseals meet all these exacting demands. And more—they form a positive packing against oil and compression leakage and crank-case dilution. They are made of rolled phosphor bronze. They will not rust, break or score.

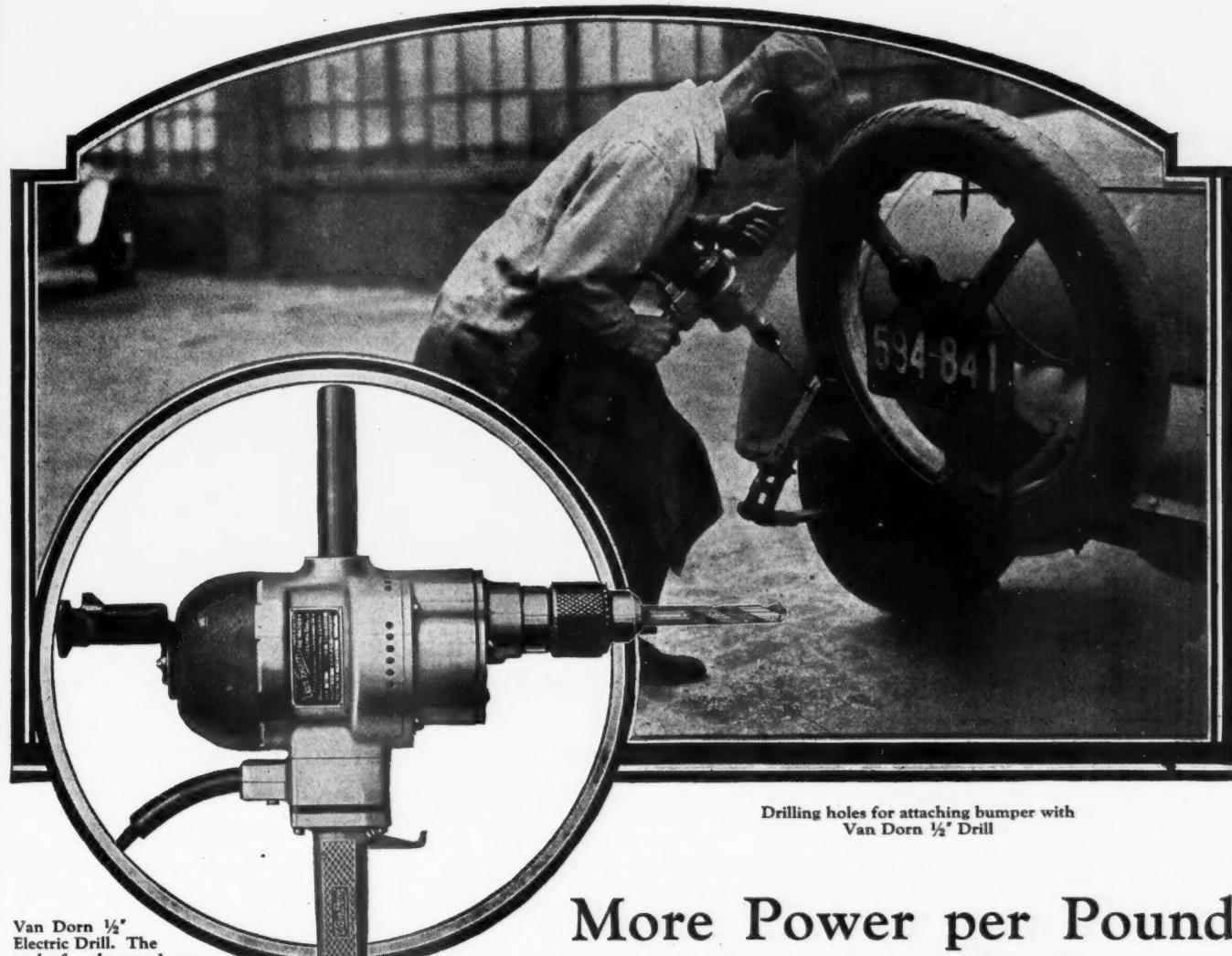
Because they are made in 1/16 inch units, the chances of sealing the cylinders are doubled and tripled.

FEDDERS MFG. CO., Inc., *Piston Ring Division, BUFFALO, N. Y.*

FEDDERS MANUFACTURING CO.  
Dept. M. 3, Buffalo, N. Y.  
Please tell me about your Bronseal merchant-  
dising plan.

Firm name \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_  
State \_\_\_\_\_

**Bronseal**  
**Piston Rings**



Drilling holes for attaching bumper with  
Van Dorn 1/2" Drill

**Van Dorn 1/2"**  
Electric Drill. The  
tool of a thousand uses  
for automotive servicing, runs on  
A. C. or D. C., weighs 16 lbs. and  
sells for only \$60.00.

## More Power per Pound Less Cost per Hole

The 1/2" Van Dorn Electric Drill shown at work on this page has more power per pound than any other 1/2" Universal Electric Drill on the market.

It is a sturdy, heavy duty Van Dorn drill throughout with ball bearings, safety switch and other mechanical features that have made Van Dorn tools the choice of the Automotive Industry for nearly a quarter century:—

*Automotive Jobbers—Van Dorn Prestige,  
Performance, Publicity = Jobbers Profits.  
May we discuss our jobbing plans with you?*

**The Van Dorn Electric Tool Company**  
*Makers of Portable Electric Drilling, Reaming and Grinding Machines, Etc.*  
Cleveland, Ohio

### Sales and Service Branches

Boston  
Buffalo  
Chattanooga  
Chicago  
Cincinnati  
Detroit  
Kansas City  
Los Angeles  
Montreal

Toronto

New York City  
Philadelphia  
Pittsburgh  
Richmond  
St. Louis  
St. Paul  
Salt Lake City  
San Francisco  
Seattle

**"Van Dorn"**  
**ELECTRIC DRILLS**



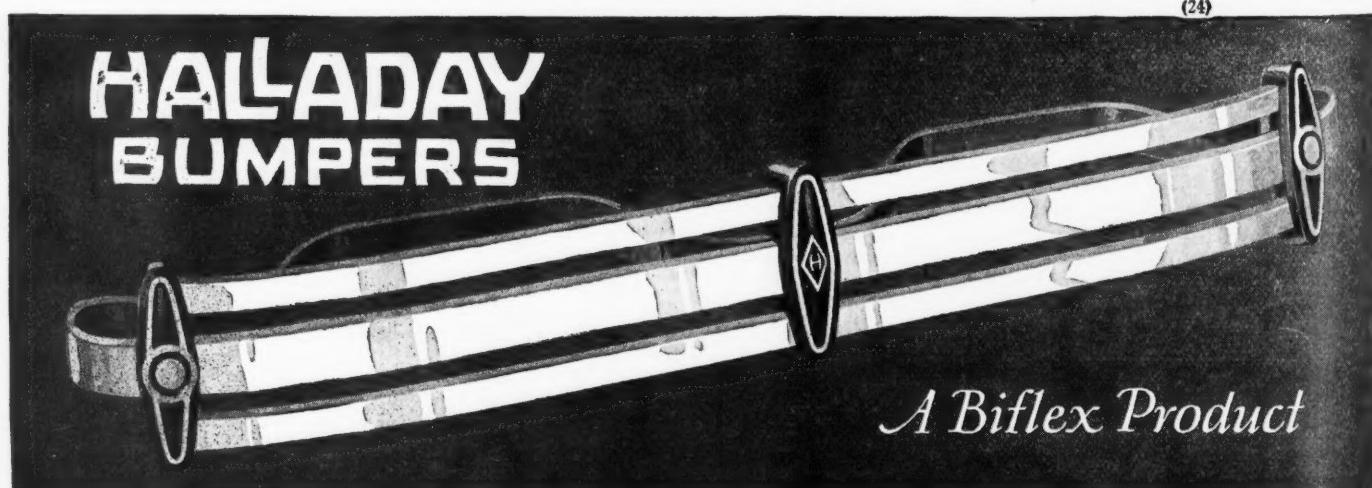
## *The Line of Least Sales Resistance*

You get more assistance and meet less resistance in selling the Biflex-Halladay line than any other.

This is the line that gives the car owner real *life* protection and the dealer real *profit* protection.

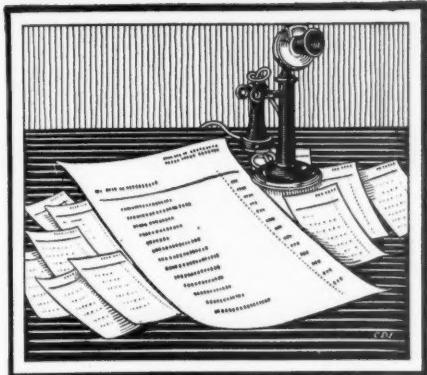
No other bumpers offer you the advantages that you have with this great combination—a larger variety of bumper styles and sizes—both Biflex and parallel bar. A wider range of retail bumper prices. Interchangeable brackets on Biflex and Halladay bumpers for a majority of cars. A strong national advertising campaign including full pages in The Saturday Evening Post, which will create a greater demand for these popular bumpers.

THE BIFLEX CORPORATION, WAUKEGAN, ILLINOIS



# "I'M Glad

## my telephone bill is so big!"



IT WAS A BANKER who told us he was glad his telephone bill was so big. He remembered the days when it was smaller, and he knew what the larger use of the telephone meant — decreases in traveling expense, in time lost—and definitely measurable additions to business. "Without the long distance telephone," he said, "we simply could not handle our present business."

Nowhere, outside America, is the telephone used as such a constructive business economy. American homes and businesses use 63 per cent of the telephones of the world, and the number is increasing at the rate of 3000 each working day. The business houses of Europe are agitating in their daily press and in international conference for a long distance telephone system like America's.

Are you and your concern making full use of telephone economy? In any final analysis, the telephone in business costs nothing. The total loss of the expense of

a trip may be saved by telephoning in advance. In thousands of cases, without the expenses and delay of travel, the contact is made and the deal closed by a call over the long distance telephone.

Your local Bell company, upon call, will gladly have its Commercial Department advise your concern how to use the telephone for greater profit. But why wait for a special survey? You know what the telephone now does for you locally. It will do the same over hundreds and thousands of miles. Long Distance is waiting for your call. . . . . Number, please?

## BELL LONG DISTANCE SERVICE





A REAL, big-car horn, at a price that gives you a chance to sell every owner of a car with a "squawker." The famous Basco Model B motor-driven horn that's been \$5.00!

The outstanding horn value—in looks, size, tone and actual quality. Only in price is it in the light-car class—and that's where your volume and your profits are.

Installed in a few moments; oiled and adjusted from the outside; guaranteed; carries a real money-making discount. Write for new horn folder and name of nearest Basco Distributor.

**BRIGGS & STRATTON CORP.**

MILWAUKEE



WISCONSIN



Engine  
Tester  
and  
Carbon  
Outlet  
Valve

## Why the Cooper Is THE Sales-Getter

Because it's a combined muffler cut-out, engine tester and carbon outlet valve.

Because it enables the motorist to "listen in" on his engine; keep it tuned up; keep it clean of carbon.

Because of its rugged construction; extra-heavy spring, flapper and axle; absolute silence when closed.

Because of its easy installation, without weakening or severing the exhaust pipe.

Because every motorist wants one.

Order from your jobber now.

Nationally  
Advertised



A better and more convenient control for Cut-out, Heater Valves, Chokes, Radiators, etc. Patented. A twist of wrist locks it in any position. Brass and steel—handsomely nickelated and polished.

Price..... \$2.50



New Cooper Jr. Price \$1.25.  
Similar in operation. Complete with Cooper  
Special Cut-out for Fords..... \$3.75

For All Makes of Cars

### PRICES

Valves Only	
1½ in.	\$2.50
1⅔, 1¾, 1⅓	3.00
2, 2⅓	3.50
2¼, 2⅓, 2½, 2⅔	4.00
2¾, 2⅔, 3	5.00
Chevrolet special	4.00
Cooper special valve, complete with pedal for Fords	3.00

Cooper "Chevrolet  
Special" Cut-out.  
Valve  
only..... \$4.00



THE COOPER MANUFACTURING CO.

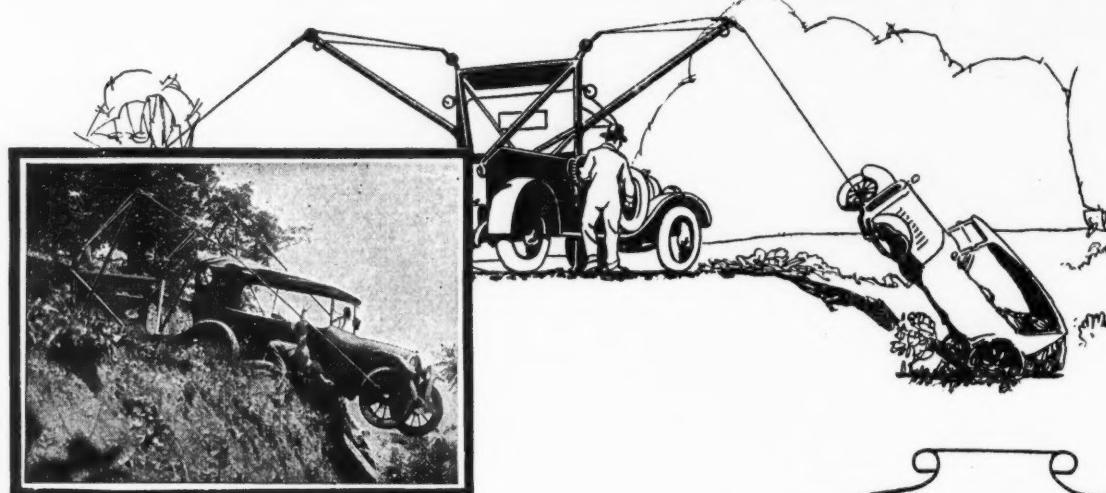
419 South First Avenue Marshalltown, Iowa

Exclusive Sales Representatives:

THE FULTON CO., MILWAUKEE, WIS.

Cooper  
Helps You  
Sell

# Increase Your Repair Business with a - **HOLMES WRECKER**



## **Independent Boom Control and Cable Guards and Guides**

The Double Swinging Booms which are found only on Holmes Wreckers are controlled by an independent hoisting mechanism which raises or lowers each boom to any desired height. This arrangement gives a wider range of action than possible with any other equipment. These adjustable Booms permit the lifting rather than the dragging of the wreck and eliminate any interruption to or from traffic, and makes possible the handling of a wrecked car without further damaging it.

All Holmes Wreckers are completely equipped with properly designed cable guards and guides absolutely preventing cable from climbing off pulley.

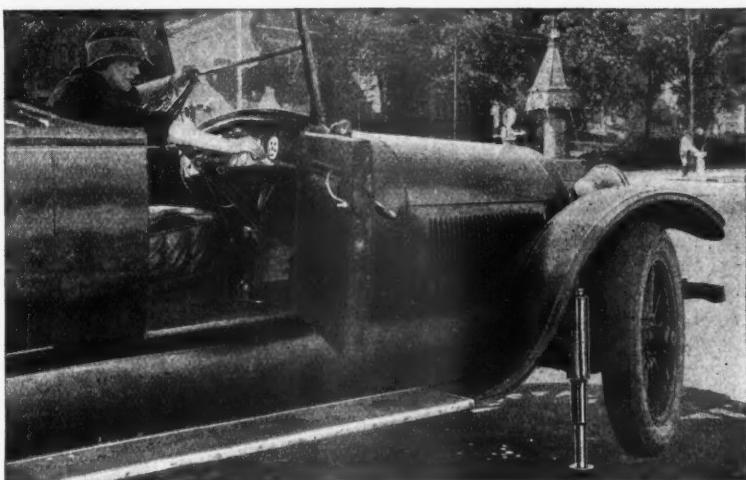
There are 15 big important exclusive features embodied in the construction of Holmes Wreckers that make them superior. These features are listed in the panel opposite. They are all equally important. Find out about them—just what they mean to rapid, efficient, wrecking service.

Ask your Jobber for complete information about the three types of Holmes Wreckers and other Holmes Shop and Garage Equipment, or write this company for complete catalog.

**ERNEST HOLMES CO.**  
CHATTANOOGA,  
TENNESSEE

### **15 EXCLUSIVE HOLMES FEATURES**

1. 100 Foot Operating Range
2. Don't Block Traffic.
3. Transfers Load to the Road.
4. Easily Operated from the Ground.
5. "V" Tow Bars.
6. Swinging Booms.
7. Double Booms.
8. Electric Lights for Night Work.
9. Steel Body.
10. Perfect Balance.
11. Two Speeds.
12. Full Floating Low Speed Power Shaft.
13. Hand or Power Driven.
14. Independent Boom Control.
15. Cable Guards and Guides.



# Absolutely New Idea For Automobiles

## Hydraulic Jack and Shock Absorber (COMBINED)

**Simply Revolutionary—Nothing else like it.**

Without leaving your seat and by merely turning a key you can jack up any or all wheels.

No getting out and under—Jack always in position ready for instant use. Saves time and labor in changing tires or putting on chains. Simplifies getting out of a mud hole or a ditch. So simple a child can operate it.

But it does more. A highly efficient hydraulic Shock Absorber and rebound checker is built in and combined with each jack.

The Paul combined Automatic Jack and Shock Absorber consists primarily of two telescoping cylinders operating on the hydraulic principle. A motor driven pump furnishes the lifting power when used on a jack.

Makes a strong appeal to everyone who drives a car—especially to busy men, women, bus transportation companies and fire departments.

**Simple—Durable—Not Expensive  
Fits All Cars**

### DISTRIBUTORS!

Exclusive state franchise with factory and publicity co-operation will be given to men with sales and organizing ability.

Earnings will warrant attention of high caliber men with sufficient capital to build a volume of business.

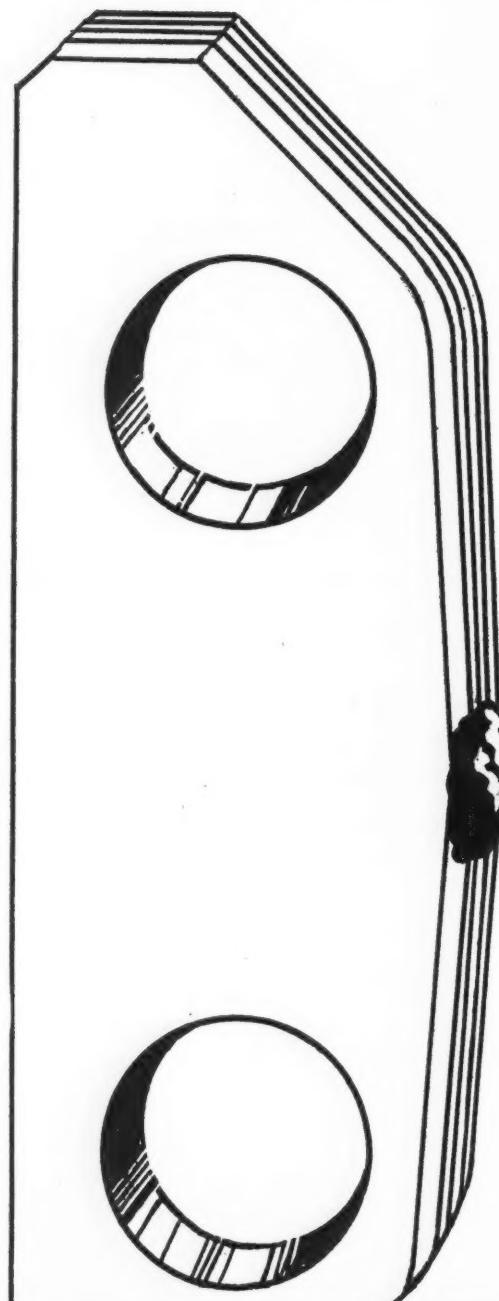
Wire or write for full particulars.

Illustrated booklet sent on request.

**The Paul Company**  
2802 to 2832 West Superior St.  
Duluth, Minn.



**THE GREATEST  
SHIM IDEA  
YOU'VE EVER SEEN**



Who ever thought that there would be any great big revolutionary idea in shim construction?

Well, just take a look at this National Shim. You'll get the idea at a glance. Every National Shim is built up of layers of shim stock, varying in thickness from .003 of an inch.

These are held in one single, workable unit by a drop of solder at the center. This gives you all the advantages of a built up shim—but without solder between the leaves—with danger of shim compression.

With National Shims, you can remove as many layers as you like. And then, you can put them back, if you want to. Removing layers doesn't spoil them.

National Shims are made in sizes for every size and type of motor. Prices are right. Ask your jobber for National Shims. Remember the name—National Shims.

We also make National Star Lock Washers. Write for prices and information.

**JOBBERS:** We have a mighty attractive proposition for you. Write for catalog, proposition and sample National Shim. Here's a line you will want to handle.

**NATIONAL MOTOR BEARING  
COMPANY**

1609 Pine Street,  
SAN FRANCISCO, CAL.

**NATIONAL  
SHIMS**



# WILLS SAINTE CLAIRE

*Motor*



*Cars*



**The Car**—The new Wills Sainte Claire Six is unquestionably the recognized engineering achievement of the decade. At every automobile show where this car has been displayed it has **dominated** the show. The public does appreciate fine engineering and is willing to pay for it—as evidenced by actual sales made at these shows, many of which were on the inspection of the chassis alone. One dealer secured **five orders on one demonstration**.

**The Factory**—Wills Sainte Claire, Inc., is a \$15,000,000 corporation with approximately \$3,500,000 in quick assets with cash on hand as of January 1st in excess of \$1,500,000. There are no loans, mortgages, or outstanding indebtedness of any kind other than current accounts, which are low. Financially, Wills Sainte Claire, Inc., IS STRONG.

C. Harold Wills, as president and general manager of the company, is recognized as an engineer, metallurgist and a merchandiser of international prominence. Associated with him in the departments of finance, production and sales are men who have **won their spurs** by outstanding accomplishments in their respective fields. As an organization, Wills Sainte Claire, Inc., IS STRONG.

**The Policy**—Wills Sainte Claire, Inc., has never countenanced forced quotas and forced production

—*and it never will.*

The dealer who handles the Wills Sainte Claire **orders the cars himself** and he is never sacrificed in the interests of volume production.

Fairness and squareness have always been the policy

—*and they always will be.*

For 1925, Wills Sainte Claire, Inc., has the most expansive and the most aggressive sales and merchandising program in its history.

—*and those dealers who handle the Wills Sainte Claire are*

—**GOING TO MAKE MONEY.**

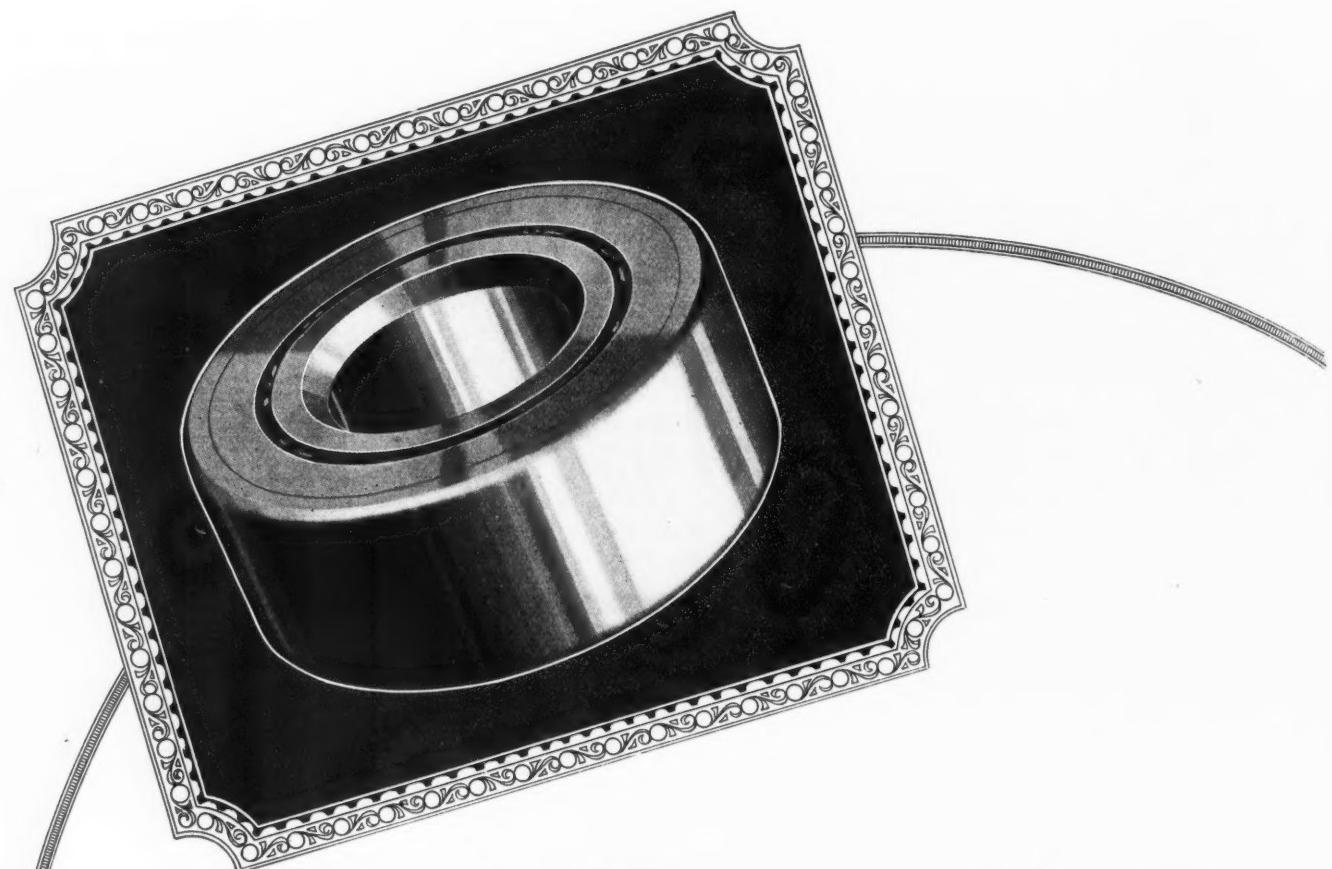
Write the factory today for full information regarding representation in your city.




---

**WILLS SAINTE CLAIRE, Inc.**

Marysville, Michigan



# New Departure Ball Bearings

## **THE TREND IS TOWARD BALL BEARINGS**

**A**NNUAL reviews of car specifications show a tendency toward the increased use of ball bearings in transmissions. The advantages of permanent rigidity of shaft alignment without adjustment overshadow the slight consideration of price.



It is surprising to find how many car owners are carrying a Jack in their car that was never made to change Balloon Tires. These two Jacks meet all the new requirements: low initial height — greater lift — with long handle for bumper clearance. If I were a Dealer I would put these two Jacks in my window with a sign recommending them for Balloon Tires, and I would make it a point to see that my customers were properly Jack equipped. There is just as much profit in selling Jacks as in selling any other piece of merchandise in your store.

*Willard Walker*

*President.*

**Walker JACKS**

"Dependable in Service"



**Walker Manufacturing Co.**  
Racine, Wisconsin

# Better Methods Replaced the Ox Team



There is a better carburetor to replace ordinary carburetors or mixing valves. Thousands of car owners are equipping their cars both old and new with

## Special Stromberg Carburetors

They give the best possible results because they are especially designed and engineered for each particular make of car.

They make a car start easy, warm up quickly, produce great power, get away like a shot and with it pay for themselves in a short time in gasoline saved.

130 representative American Manufacturers use Stromberg Specially Engineered Carburetors as standard equipment.

Over 3,000 Service Stations in the United States.

### Prices of special carburetors and equipment:

Buick . . . . .	\$24.00	Hudson . . . . .	\$28.50
Cadillac . . . . .	32.50	Jewett . . . . .	24.00
Chandler . . . . .	24.00	Maxwell . . . . .	19.50
Chevrolet . . . . .	19.50	Nash . . . . .	22.50
Chrysler . . . . .	24.50	Oakland . . . . .	22.50
Cleveland . . . . .	24.50	Oldsmobile . . . . .	19.50
Dodge . . . . .	19.00	Overland . . . . .	17.50
Durant . . . . .	19.00	Reo . . . . .	24.50
Essex . . . . .	24.50	Star . . . . .	18.00
Ford . . . . .	15.75	Willys-Knight . . . . .	19.00

(Prices slightly higher—Pacific Coast and Canada)

**Dealers**—Stromberg replacement business is the kind of business you want—and can get with our close co-operation and attractive sales proposition. Write today for particulars. It means more trade and thoroughly satisfied customers.

THE STROMBERG MOTOR DEVICES COMPANY  
65 East 25th Street, CHICAGO

New York Branch  
250 West 57th St.

Boston Branch  
66 Brookline Ave.

San Francisco Branch—740 Polk St.

Detroit Branch  
2739 Woodward Ave.

Los Angeles Branch—1200 So. Grand Ave.

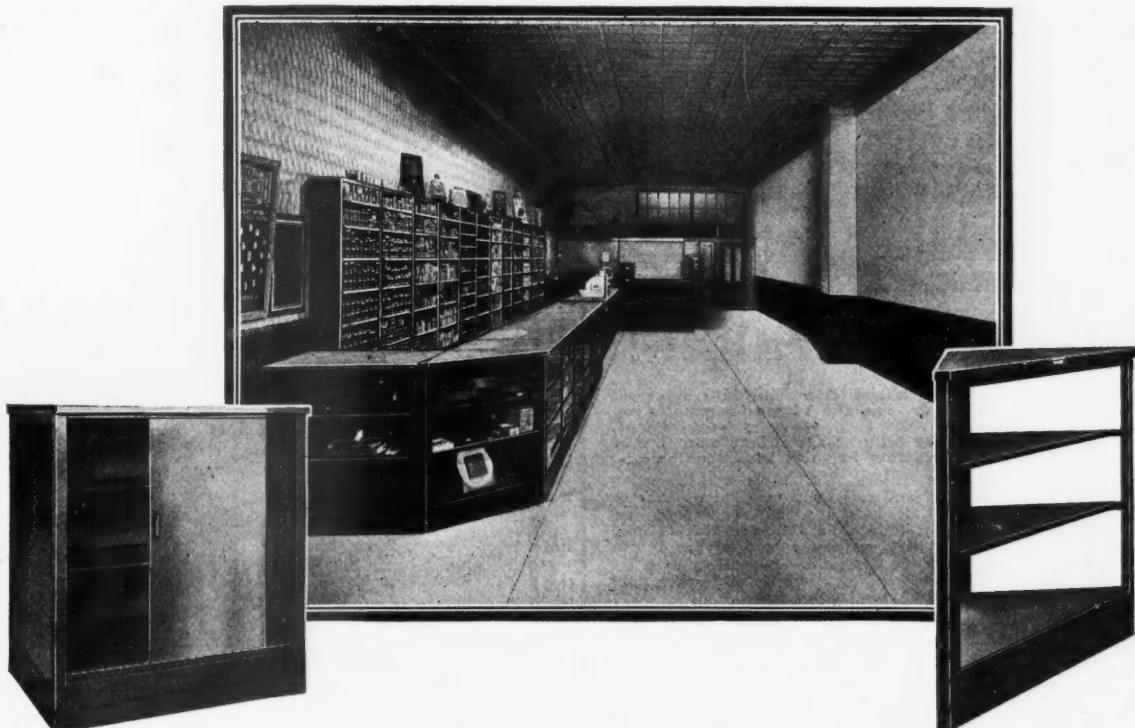
Minneapolis Branch  
1609 Hennepin Ave.

Seattle Branch—1400 Twelfth St.

London Branch  
173-175 Cleveland St. W-1

# LYON AUTO PARTS CONTROL

*Steel Storage Equipment for Automotive Parts*



## Lyon Equipped Throughout

This counter over which goods are sold by the Auto Spring Bearing Company of Roanoke, Va., is built up of the Lyon Steel Counter Units shown above. Here they are equipped with glass for the display of goods.

The shelves from which the goods are taken are Lyon Steel Shelving.

Lyon Steel Counters help sell goods. They offer excellent display. They are free from sway and rough edges. Rigidity in Lyon Steel Counters is so great that even with the counter up-ended on a corner the doors move freely. With their durable olive green baked enamel finish and heavy linoleum tops—over steel—

they insure a good looking store through long hard service. The fronts, glass or steel, can be changed quickly without disturbing any other part.

With Lyon Equipment there is a service. We will help you select a Lyon System that fits your stock absolutely. Write us, giving us the extent of your stock, the makes of cars you service or any other information that may guide us and we will make recommendations, without obligation to you.

Our experience in the automotive servicing field has been extensive. It will be helpful.

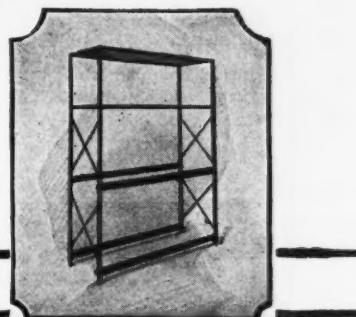
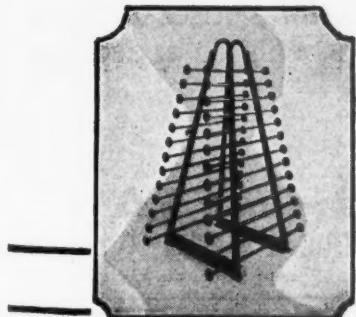
It is yours for the asking. Write us.

## Lyon Metallic Manufacturing Company Aurora - Illinois

Lyon Auto Parts Control Systems are sold by  
leading Automotive Jobbers



*for every storage need*

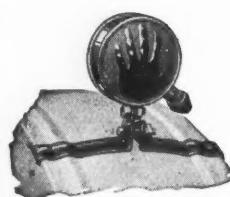




The "Alert"  
No. 37



## Apply your brakes!



No. 25 "Sentinel" with  
No. 7 "Jiffy" Bracket

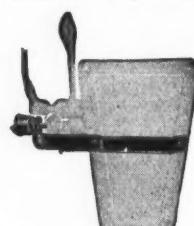


"Tentacle"  
No. 33



"Dependable"  
No. 2 Stop Lamp  
Switch

A well made, durable stop lamp switch which always functions.



"Minute"  
No. 6 Stop Lamp  
Switch

A new stop lamp switch for Fords. Installed in a minute. Held securely by two of the Ford transmission cover screws and is operated by the brake pedal. No wires to stretch, sag or get out of order.

**The Victor Line**

*They win!*

## RED SEALS for Ignition

for fishing boats  
motor boats, tractors  
stationary engines  
Also for radio,  
bells and for  
blasting

**RED SEAL DRY BATTERY**

FOR RADIO THE DEPENDABLE "A" BATTERY  
GUARANTEED TO GIVE SATISFACTION FOR ANY USE SINCE IT IS A DRY BATTERY OF HIGH QUALITY

The full color, Red Seal  
Window Display for March.

## The Battery Season is here!

SPRING is the time to feature Red Seal Batteries! Red Seals for ignition on motor boats; Red Seals on tractors for plowing; Red Seals for stump-blasting; for spraying-machines; for the doorbells of new houses—and of course, always for radio.

The illustration shows the March mailing in the Red Seal Window Display Service. Use it in your window together with a display of Red Seals to speed up battery sales.

**MANHATTAN**  
ELECTRICAL SUPPLY CO., INC.  
NEW YORK CHICAGO ST. LOUIS SAN FRANCISCO

MAKERS OF MANHATTAN AND RED SEAL PRODUCTS

# TOLEDO Standardized VALVES

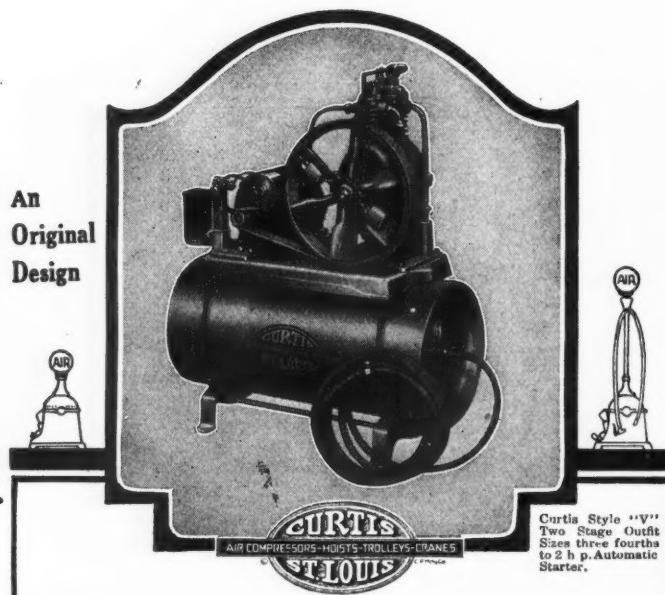
This is a one-piece valve made of two metals. This weld is indestructible. This exclusive process produces a bond that will not yield. Tear open the head. Saw into it. Cut it with a chisel. You cannot separate the gray iron head from the carbon steel stem.

*They're Electrically Welded  
by an Exclusive Process*



There is a cleaner profit, a quicker profit, and a bigger measure of service to your customer when you "Ask 'em to buy" a set. Most often the bill is less. Always the results are better — to you and to your customer. Wholesale stocks for all cars in all markets.

**The Toledo Steel Products Company, Toledo, Ohio**  
Valves exclusively for over eleven years



## Stability~Progress

Backed by 71 Years' Experience

Every Curtis Compressor Outfit and Air Stand has a background of stability measured by 71 years of progressive manufacturing experience.

The last 28 years of this long period have been devoted to the design and perfection of Curtis Air Compressors—so that today every buyer of Curtis equipment can be certain of these two vital facts:—(1) He is buying a thoroughly reliable product that has long been recognized as the standard of excellence and (2) he is dealing with an institution of known integrity and stability whose product is not likely to become an "orphan."

### Superior Curtis Compressor Features

Controlled splash oiling system enables compressor to run longer on same amount of oil. Fan flywheel helps cool cylinders and increases efficiency. Valves light, large, inspectable. Heads removable without loosening pipe connections. Hand unloader (or centrifugal on automatic outfits) permits starting unloaded against full tank pressure. No spitting of oil when the Curtis Automatic cuts out. Curtis two-stage has copper inter-cooler, the most efficient metal for this purpose. Many other features.

**CURTIS AIR AND WATER STAND**—Made either column or low type, free from all complicated parts, automatic valves and the like which quickly get out of order. Present many exclusive features.

**CURTIS PNEUMATIC MACHINERY CO.**  
1527 Kienlen Ave.  
St. Louis, U.S.A.  
Branch Office: 530-H Hudson Terminal, New York City



# CURTIS

1854 ANNIVERSARY 1925

Mail this Coupon

**CURTIS PNEUMATIC MACHINERY CO.**  
1527 KIENLEN AVE. ST. LOUIS, MO.

Gentlemen:—Please send me full details on  Curtis Air Compressors  Curtis Air Stands, your proposition and prices.

Name.....

Address.....

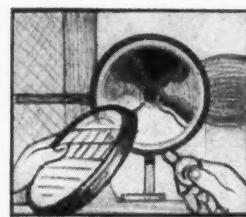
Jobber's Name.....

Address.....

# To equip with Flatlite is as easy as putting in new bulbs!

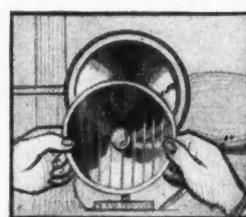
(1)

Remove rim,  
lens and bulb  
from headlamp.



(2)

Place Flatlite  
Reflector (bulb  
equipped) over  
old reflector.



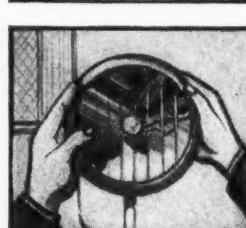
(3)

Substitute plain  
glass front  
(furnished) for  
patented lens.



(4)

Replace rim  
and tighten.



Flatlites can be installed in any standard headlamp without removing the reflectors.

This quick installation opens up Flatlite sales to motorists with broken lenses or rusted reflectors and to all those who want better, safer lighting than is possible with patented lenses which either bottle up the light or produce dangerous glare.

Complete Flatlite equipped headlamps are sold for replacement.

**THE AMERICAN FLATLITE COMPANY**

Department A  
Reading Road at Dandridge Street  
CINCINNATI, OHIO

# flatlite

Makes Window Glass a Legal Lens

# Every Week

There are so many important articles, current news items, and interesting features in the fifty-two issues of Motor Age each year, that subscribers find it most profitable to read carefully through every issue when it comes.

The timeliness of its contents is one of its most valuable assets.

Make it a point to look through Motor Age while its news is still fresh, and you will see why it is that its oldest friends and most loyal supporters read it regularly, every week.

# MOTOR AGE

5 So. Wabash Ave., Chicago, Ill.

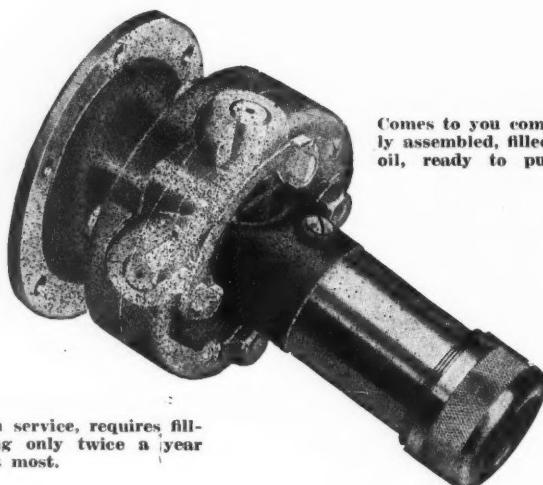
## Know That The Job Is Done Right—

And you will have no kicks and comebacks from the customers who come to you for repairs and replacements.

Know that the parts you install are built right, that they will render complete satisfaction in service with a minimum of attention.

When it comes to Universal Joints you need have no misgivings and you will know that the job is done right when you replace with the

## "MECHANICS" Oil Lubricated Universal Joint



*Write Today for complete details.*

**MECHANICS MACHINE CO.**  
ROCKFORD ILLINOIS

## No Plies to Separate

EKLA is an all-rubber radiator hose made from a tough, long-wearing compound.

Millions of pieces in use during the past three years prove its superiority. It has no plies to crack, separate and clog the cooling system.

Having no plies it costs less and shows the dealer a bigger profit.



### Cut Lengths for FORDS

EKLA hose for Fords is packed 50 large or 100 small connections to a case or 12 to a counter carton, 12 cartons to a case.



### Three-Foot Lengths for All Cars

Fifteen standard sizes ( $\frac{3}{4}$  inch to 3 inch inside diameter) are packed 18 feet to a carton. Each three-foot piece is marked every inch to simplify cutting to desired lengths.

Order EKLA All-Rubber Hose from your Accessory Jobber. You'll sell a lot of radiator hose this spring and will make more money selling EKLA.

We are also makers of CHAMPION "Heavy Duty" and MUSKETEER "Price Competition" inner tubes. A few more distributors can be added—and they will make unusual profits with these brands.

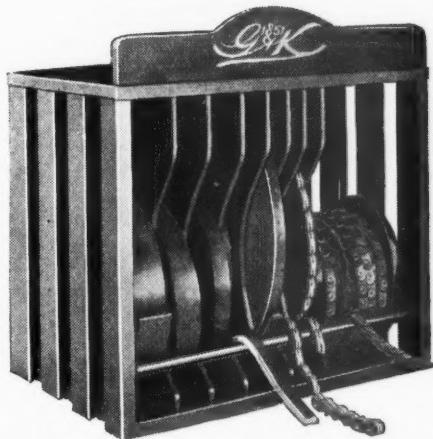
*EKLA prices allow unusual profits to jobbers and dealers. Send for prices and discounts. Catalog pages and cuts (catalog or newspaper) furnished on request.*

**The Eclat Rubber Company**  
Cuyahoga Falls, Ohio U. S. A.

L. E. Spencer Company, Nashville, Southern Representatives  
L. E. Green, 85 Second St., San Francisco, Coast Representative



## This display rack increases your fan belt sales



THIS is but one style of the handsome display racks that are helping many dealers sell more Graton & Knight Fan Belts.

Put one of these racks on your floor. Then watch the sales jump.

It is a good-natured reminder to your customers. It tells them that you sell Graton & Knight better Fan Belts.

Better because they are made of famous Graton & Knight *Standardized Leather*. Tanned and curried to resist motor heat, oil and water. Can't fray. Carefully made to hold their shape. Don't need constant tightening. Grip the smallest pulleys firmly. Run at low tension, so bearing wear is reduced.

There is a Graton & Knight Fan Belt *standardized* for every truck and pleasure car. Made in Flat, "V" and Link "V" types. Priced to give you generous profit. And every time you sell one you are selling long-time service that means a satisfied customer.

Write your jobber to-day for full information about these useful display racks and Graton & Knight Fan Belts.

**THE GRATON & KNIGHT MFG. CO.**  
Tanners—Makers of Belts and Other Leather Products  
Worcester, Mass.



**GRATON & KNIGHT**  
Standardized  
**LEATHER BELTING**

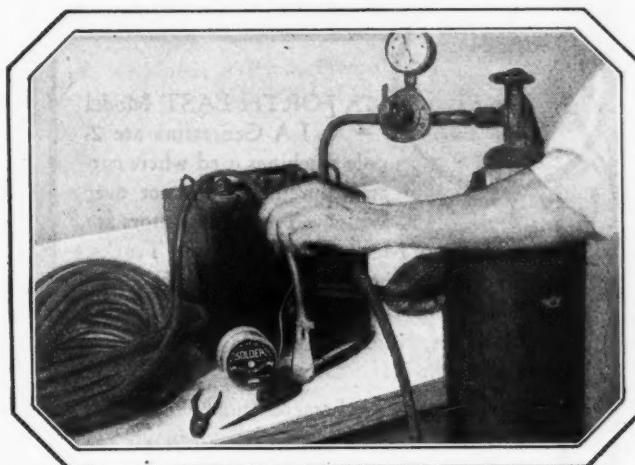
## KESTER SOLDER

Self-Fluxing



(Underwriters' Laboratories Inspected)

"Requires Only Heat"



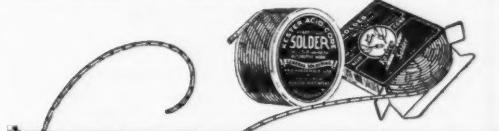
## Makes This Job Easy

SWEATING battery cable into terminals is an easy job—with Kester Solder. Kester requires only heat and, as it melts, supplies its flux from tiny pockets inside itself. This permits green help to do as good work as the mechanic. And the skilled one saves time, together with labor and material.

Soldered joints in the electrical system, from battery to spark plug terminals, mean better service from the engine.

These things, though small in themselves, go a long way to turn out a well overhauled job—and to that effect Kester helps you build a reputation for good work.

Get on a par with the other fellow—use Kester wherever solder is needed.



Kester Acid-Core Solder for general use in 1 lb. cartons; 1, 5 and 10 lb. spools. Small package Acid-Core Solder, Kester Metal Mender for autoist, householder, etc. For delicate radio and electrical work—Kester Rosin-Core Solder.

Manufactured by the

**CHICAGO SOLDER COMPANY**  
4203 Wrightwood Ave.  
CHICAGO, U. S. A.

**NORTH EAST**

Starting Lighting Ignition HORNS & SPEEDOMETERS  
NORTH EAST ELECTRIC CO.  
ROCHESTER, N.Y.

**NORTH EAST Model LA Generators** are 2-pole machines used where current requirements are not over 150 Watts. These Generators are in use on Mack Trucks, White Trucks, Sterling Engines, Fay & Bowen Engines, Four Wheel Drive Trucks, Acme Road Machines, Holt Caterpillar Tractors and Reo Right-Hand Drive Speedwagons.

The operating characteristics of 6 Volt Model LA Generators are: cut-in at 525 R.P.M. (of armature); full output at 1500 R.P.M. For 12 Volt machines of this model: cut-in at 650 R.P.M.; full output at 1600 R.P.M. Being 3rd brush regulated, the output drops at higher speeds. The output setting can be changed to meet special service conditions by means of external adjusting screws in the commutator-end housing.

Genuine Parts and Official Service for all North East Equipment available at 651 AUTHORIZED North East Service Stations.

**NORTH-EAST ELECTRIC CO.**  
ROCHESTER, N.Y., U.S.A.

*Manufacturers of Automotive Equipment for*

Dodge Brothers	Reo
Graham Brothers	Yellow Cab
Yellow Coach	Mack
Berliet	Sterling Marine Engine
White	Safeway Six Wheeler
Fifth Avenue Coach	Dodge Watercar
Yellow Sleeve Valve Eng.	Delage
Acme Road Machine	Fay & Bowen
Leon Bollee	Moreland
American La France	Four Wheel Drive
Holt Caterpillar Tractor	

**NORTH EAST SERVICE INC.**  
ROCHESTER, N.Y.

Official North East Service Organization

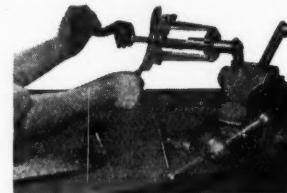
Atlanta	Chicago	London	New York
	Detroit	Paris	Rochester
	Kansas City		San Francisco
			Toronto

Service Stations in Cities of Importance throughout the World

Directory of Service Stations available on request

USE ONLY *Genuine* SERVICE PARTS

## The Puller You Want—



Pulls Wheels, Gears, Fly-Wheels,  
Ford Steering Wheel, Timing Gears, Etc.  
With Ease and Safety!

Two sizes of Crane Pullers do the majority of the pulling jobs in the general service shop. There are also larger models for big truck and bus jobs.

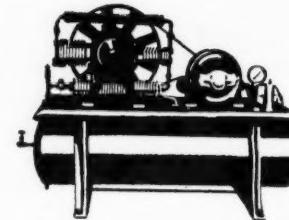
The Crane pullers are heavier and stand up under continued abuse. They are positively guaranteed against breakage in any part.

At your dealer's or direct if you mention your dealer's name. Write for illustrated folder.

**CRANE PULLER COMPANY**  
South Deerfield, Mass.



## Write To Us Anyway



If you are interested in stocking and selling our line, write to us. We need a few more good jobbers and agents. If you are in the market for any of our products, write to us. But if you are not at present in the market for anything—write to us anyway.

In addition to making silent, smooth-running, reliable air compressors, we make a point of being pleasant people to deal with. You may be in the market later. Why not establish a connection with us now? Let us tell you what we are doing. Let us give you the details of our modern up-to-date products, how they are designed, and some facts about their performance and permanence.

## Quincy Compressor Co.

Name formerly Wall Pump & Compressor Co.

217 Maine St.

Quincy, Ill., U.S.A.



# You Can't Beat Gemco!

Experience counts. It has made Gemco the greatest bumper of all time. Scientifically and correctly designed. Greater strength in proportion to weight. Beautiful, lasting finish. And to cap the climax of Gemco's achievement a line of brackets has been developed which challenges all comparison. Easily, quickly, securely attached—and they fit all bumpers. Positively interchangeable with all makes.

*Handle Gemco and you will sell more bumpers this Spring.*

**GEMCO MFG. CO.**

760 S. Pierce St.  
MILWAUKEE, WIS.

*Gemco*  
BUMPER



MOTOR AGE  
January 29, 1925

**EDITORIAL**

**MOTOR AGE**

**TO market its products through dealers & Goodrich Tires**

**Lubrication of the rear axle differential**

**French Makers Slow Down**

**Honest Dealing**

**AIR**

**Joseph Dixon Crucible Co.**  
Jersey City, N. J.  
Established 1827

The illustration shows a newspaper clipping from "MOTOR AGE" dated January 29, 1925. The main headline reads "TO market its products through dealers & Goodrich Tires". Below it, a column discusses "Lubrication of the rear axle differential". Another column on the right is titled "French Makers Slow Down". At the bottom, there is a section titled "Honest Dealing" and a sidebar about "AIR". The background of the entire page is a landscape with trees and a road.

## DIXON'S 677

FOR TRANSMISSIONS  
AND DIFFERENTIALS

Meets all requirements of a year-round lubricant.

Not affected by extremes of heat or cold, it will not stiffen and channel in cold weather and leave gears and bearings unprotected.

Dixon's 677 reduces power losses, eliminates strain and provides better and longer lubrication.

*Write for Booklet 82-G. and Dealer Proposition*

**Joseph Dixon Crucible Co.**  
Jersey City, N. J.  
Established 1827

# Special Time-Limit Offer

## *Like Finding Fifty Dollars*



**SIMPPLICITY  
CRANK-PIN  
TOOL  
FREE**

This tool will true-up worn, scored or "egg-shaped" crank pins on all cars.

Any mechanic can use it with precision. Sells regularly at \$50. Free with order for Reborer and Grinder pictured at right.

**Simplicity Crank-pin Tool included with purchase of Reborer and Grinder**

(This offer expires April 15, 1925 and will not be renewed)

To start off the spring season with a rush we offer FREE to each automobile repair shop or garage placing a definite order for a Simplicity Reborer and Grinder, our \$50 Simplicity Crank-pin Tool.

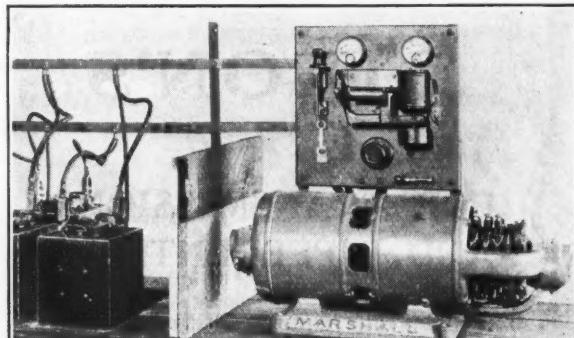
This tool—pictured on left—is a real tool not a makeshift—used and prized in the best shops the country over.

**SPECIAL TERMS ALSO OFFERED DURING THIS PERIOD PRIOR TO APRIL 15**

Write when it will be convenient to you for our representative to give you a free demonstration in your own shop.

**SIMPPLICITY MFG. CO.**  
110 Spring St.  
Port Washington

Wis.



### *The WESTON Equipped Garage*

CUSTOMERS instinctively place dependence in the garage with Weston equipped apparatus and Weston automotive testing instruments. A good testing reputation leads to more sales in other directions. When delivering a newly charged cell, show your customer that the job has been properly done by making a high rate discharge test with a Weston Model 453.

Write for circular "H" describing Weston Automotive Instruments.

WESTON ELECTRICAL INSTRUMENT CORPORATION

10 Weston Avenue

Newark, N. J.

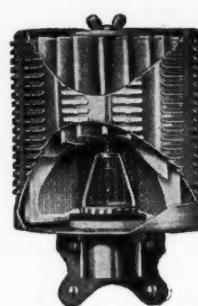


**99<sup>9</sup>/<sub>10</sub> EFFICIENT** **PROTECTOMOTOR**  
REG. U. S. PAT. OFF.  
Perfect Positive Protection **99<sup>9</sup>/<sub>10</sub> EFFICIENT**

*It filters the Air*



Clean white filtering medium before being placed in service on machine



After service, showing dust, sand, grit and dirt kept out of the motor

### **Making Protectomotor Sales Easy**

Advertisements in the Saturday Evening Post, beginning March 14th,—will tell the public what dealers and manufacturers already know:

That Protectomotor will reduce wear on motor 75% to 85%; that it filters all the dust, sand and grit out of the air; that it eliminates all motor troubles due to unfiltered air.

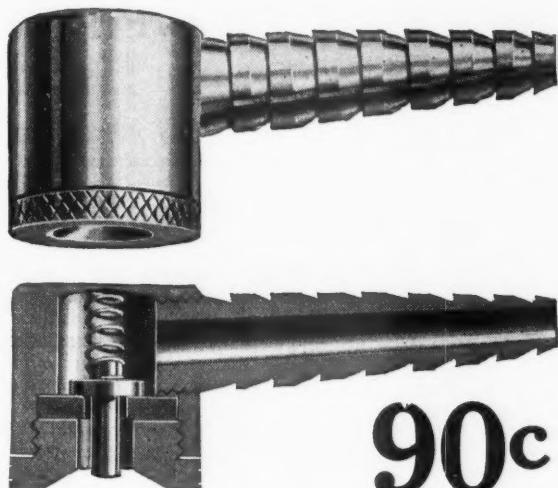
Attractive proposition for dealers and high grade salesmen.

**Staynew Filter Corporation**

ROCHESTER, N. Y.

A motor without a Protectomotor is like a watch without a case.

# 2 to 5 times longer service from this new Air Chuck-



90c

Machined from solid brass and heavily nickelized. Will last for years. No. 0 fits  $\frac{1}{4}$  inch hose; No. 1,  $\frac{3}{8}$  to  $\frac{1}{2}$  inch hose, and No. 2 is for  $\frac{3}{4}$  inch iron pipe.

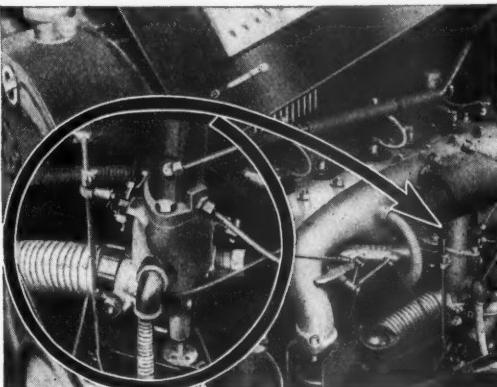
Until you use a Rose Air Chuck, you won't know air chuck perfection. A real surprise awaits you. Just a light touch against the valve starts an instant and free flow of air into the tire. No leakage. No binding.

Improved Rose design practically eliminates wear. Chuck washers now give a year or more of continuous service on busy air lines. And the removable chuck head makes replacement instant.

90c for a Rose Air Chuck buys a lot of satisfaction and ends air chuck grief forever. Tell your jobber that you want a "Rose" chuck.

**FRANK ROSE MFG. CO.**  
Hastings, Nebr.

The **ROSE AIR CHUCK**



This is the new model Marvel for Studebaker Big Six and Special Six.

**Marvel Is Standard Equipment on Buick (12 years) and Nash (7 years).**  
Complete Carburetion Systems Announced to Date  
Chevrolet \$18.00 Ford \$18.00

Studebaker Big Six \$28.00  
Studebaker Special Six \$28.00  
(Slightly higher on West Coast.)

WRITE TODAY FOR OUR DEALER and  
DISTRIBUTOR PROPOSITION

\* Motorcide, n. (Lat. *motorcidium*; from *motum*, source of mechanical power, and *caedere*, to kill.)

## AVOID MOTORCIDE\*

With the  
**New  
Marvel Carbureter**

YOU CAN KILL a motor by "choking" it to death—and you can kill its life and power in another way—

DO YOU KNOW what happens during that annoying period of choker manipulation when your motor is either overchoked (staggering and galloping along in lurches)—or underchoked (spitting, sputtering and backfiring)?

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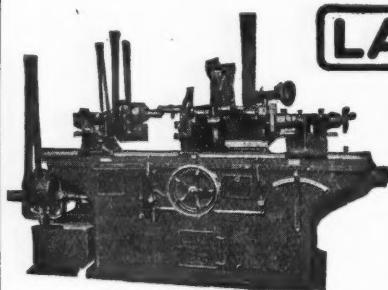
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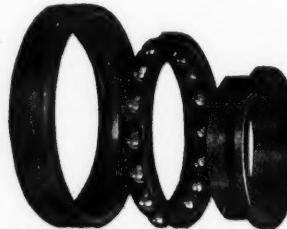


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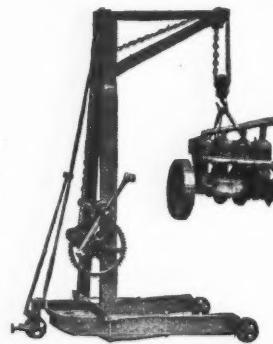


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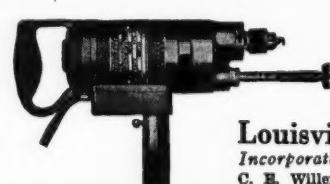
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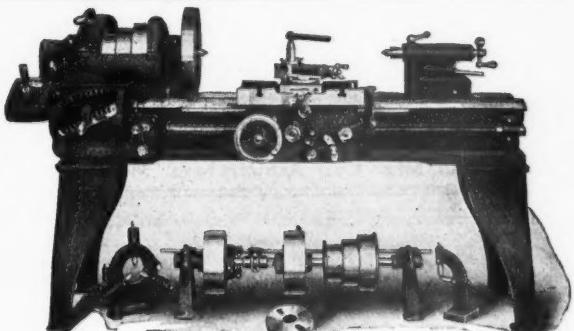
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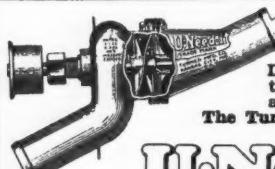
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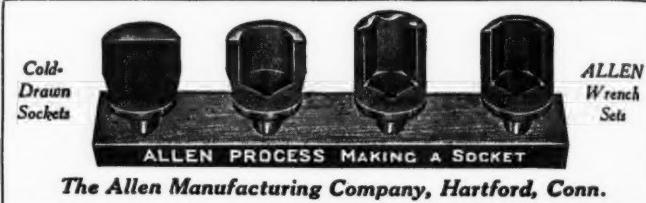
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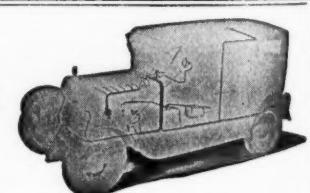
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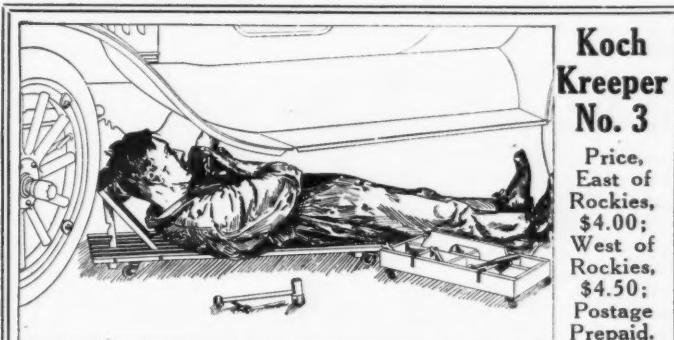
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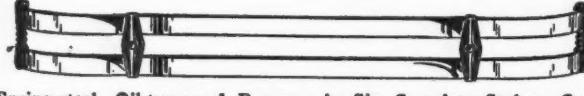
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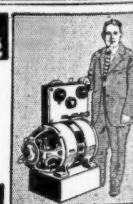
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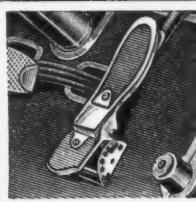
The Market's Best Foot Rest

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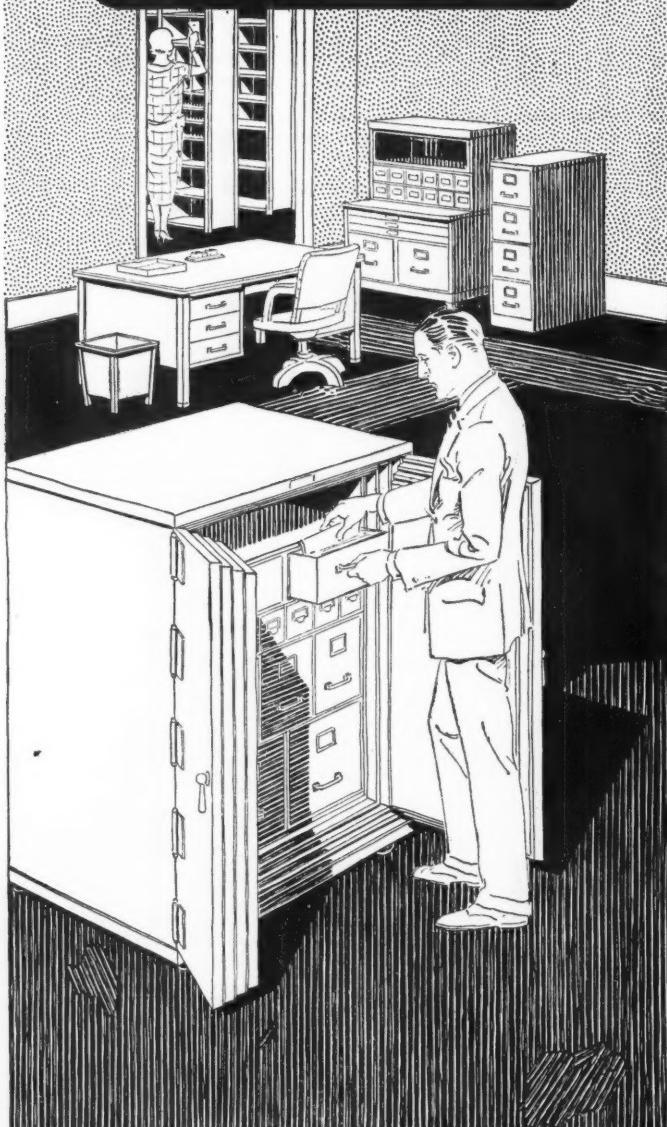
**GF Allsteel Safes**, tested and approved by the Underwriters' Laboratories, have brought their contents, uninjured, through countless severe fires. The **Allsteel** mark on office equipment is your guarantee of permanent satisfaction.

*Write for a copy of the GF book: "Safe-guarding the Vital Records of Business."*

**THE GENERAL FIREPROOFING CO.**

**Youngstown, Ohio**

*Dealers Everywhere - Canadian Plant: Toronto, Ontario*



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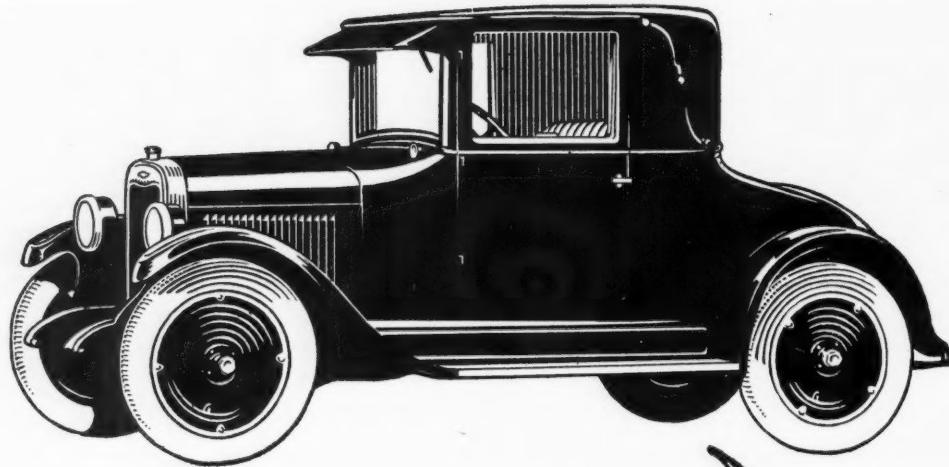
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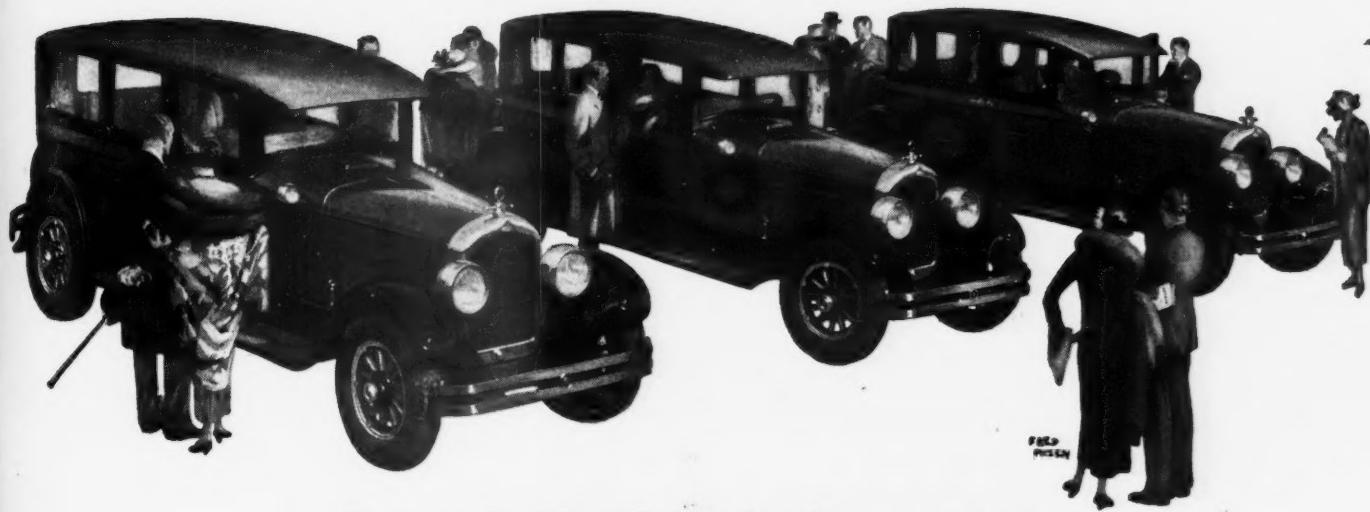






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*—From an Editorial in a Leading Automobile Publication.*